SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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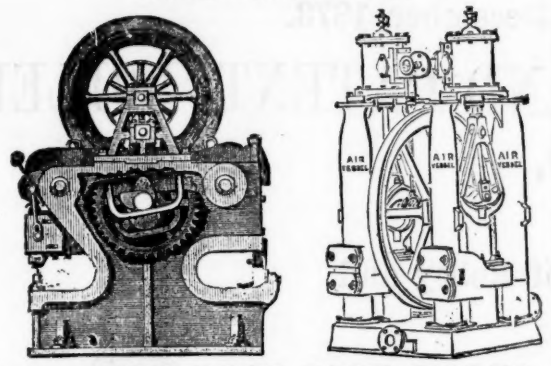

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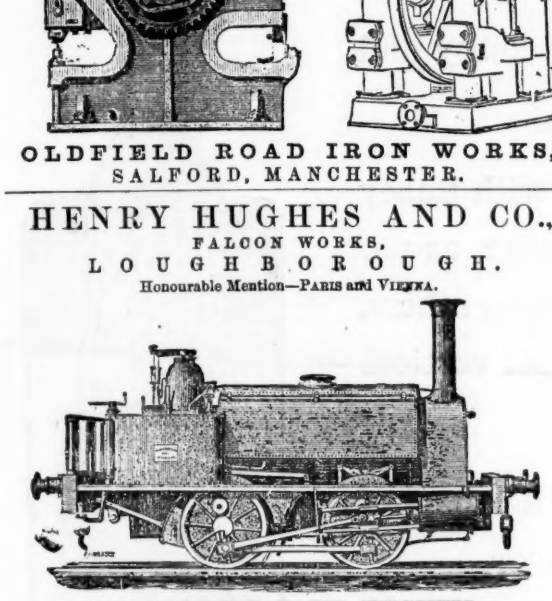

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FOR CONVEYING
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FIRE TO THE
BLASTING ROCKS, &c
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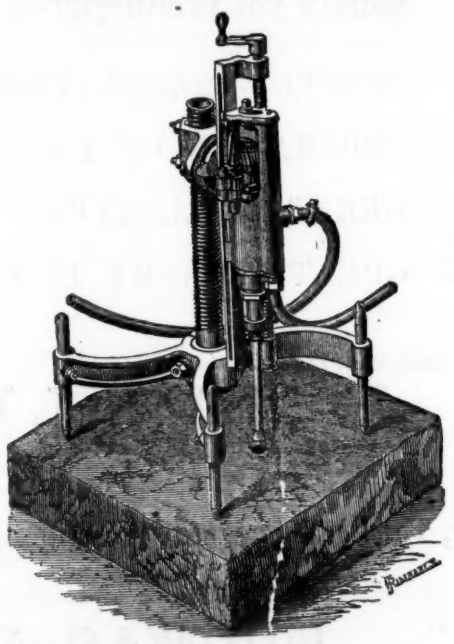

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This PATENT APPARATUS is EXCEEDINGLY SIMPLE and INEXPENSIVE IN CONSTRUCTION, and is so arranged as may seem best for assisting the substances to be operated upon.
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More effective than condensing towers.
Large chimneys can be done away with. Succeeds thoroughly in condensing ammonia.
UTILISES ALL EMISSIONS.
OF GREAT VALUE IN SMELTING WORKS.
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At sea or on shore, and are the
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In the boiler to the piston at the top and bottom of the stroke automatically cutting off the steam according to the requirements of the work, thereby effecting an
IMPORTANT SAVING OF FUEL,
And, in case of a break-down,
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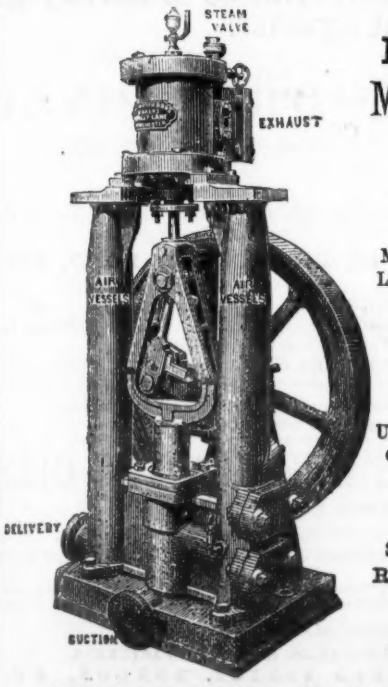

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For Neatness, Simplicity, and Efficiency.
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THE "KAINOTOMON" ROCK DRILL,

The SIMPLEST, CHEAPEST, and BEST Machine in the World for SINKING, MINING, and QUARRYING,

Is extensively used at the principal Mines, Collieries, and Quarries of Great Britain, and the Continent of Europe.

"To this invention, which appears to possess several advantages over the machines previously exhibited at Falmouth, the Judges are *unanimous* in awarding a first-class silver medal" (the highest award).—*Report of the Judges at the Royal Cornwall Polytechnic Society's Exhibition*, 1873.

"The boring machine works splendidly."—W. TORRANCE: *Mid-Calder.*

"For simplicity, compactness, and performance of work, your drill excels all others."—JOHN MAIN: *Crossfield Ironworks.*

"Under the most difficult circumstances, they give every satisfaction."—G. GREY: *Montreal Iron Mines, Cumberland.*

"The simplest and best boring machine."—Capt. WASLEY'S letter to the *Mining Journal*, Oct. 18, 1873.

"It gives every satisfaction."—W. E. WALKER: *Lord Leconfield's Iron Mines.*

"The rock-drill I bought of you seven months ago has given me entire satisfaction, and I am convinced that the 'Kainotomon' is the best rock-drill in the market."—P. MCGINNIS: *Strabane.*

"I am quite satisfied with the working of it. For sinking pits it is a first-rate invention; I can do as much boring with it myself as six men can do by hand." S. JENKINS: *Abertillery.*

The advantages over other Rock-boring Machines claimed for the "Kainotomon" are—

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3.—It requires the turning of ONLY ONE, instead of a number, of set screws, to fix it in position at any angle.
4.—It may be fed 3 inches out of stroke, without stopping the working of the drill, *an invaluable advantage.*
5.—It is not liable to derangement.
6.—It has not one-third the number of parts in its construction.
7.—All stuffing-boxes and parts requiring adjustment are dispensed with.
8.—It is so simple in its construction that any ordinary labourer or miner can drive it, simply having to turn on the motive power and feed the drill.
9.—The rotation is compulsory, and regular.
10.—40 lbs. pressure only is required to work it.
11.—A saving of over 50 per cent. in iron and flexible piping.

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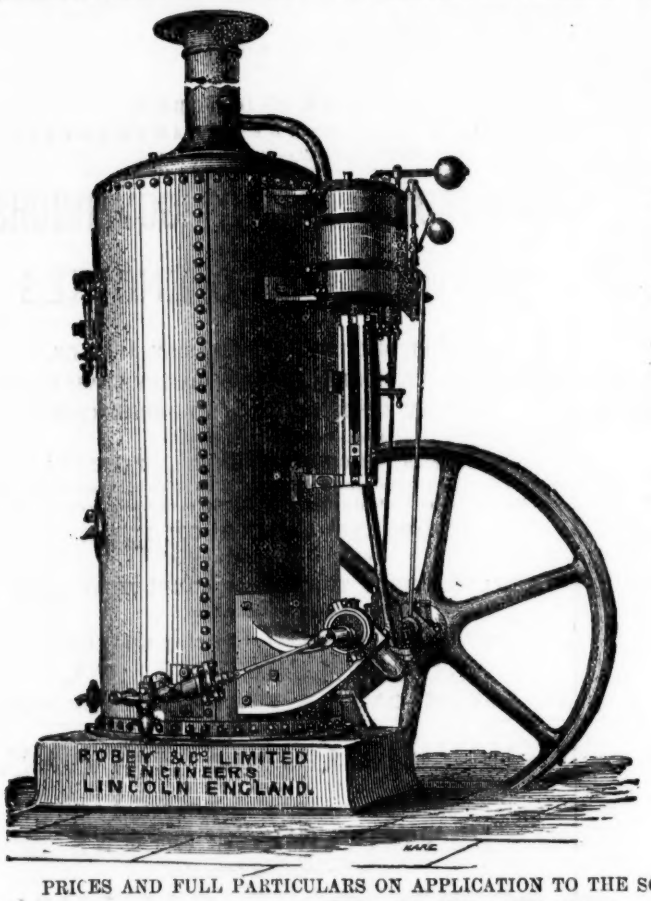
THOS. A. WARRINGTON, 30, KING STREET, CHEAPSIDE, LONDON, E.C.

Patent No. 4136 - - - - - - Dated 16th December, 1873.
Patent No. 4150 - - - - - - Dated 17th December, 1873.

IMPROVED VERTICAL STEAM ENGINES AND PATENT BOILER COMBINED.



The Illustrations show one of Robey and Co.'s improved vertical engines.

All these engines are supplied with Robey and Co.'s new patent vertical boiler, as per section illustrated, which has, among others, the following advantages over all vertical boilers yet produced:—

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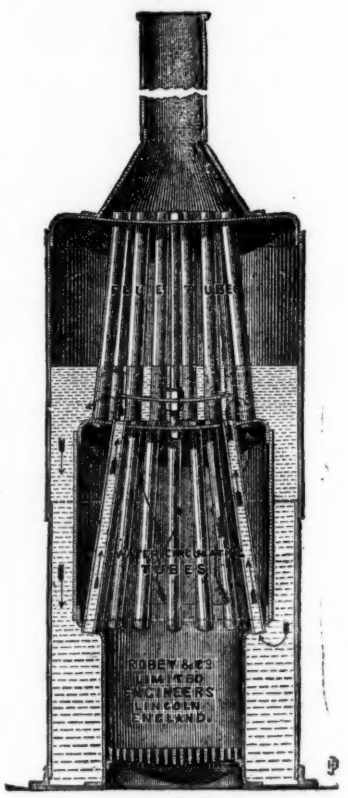
GREAT ECONOMY IN FUEL.



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ROBEY & CO., LIMITED,

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INGOTS, Nos. I and II., suitable for Pumps, Pinions, Ornamental Castings, &c. ..... £130 per ton
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Special Phosphor Bronze Bearing Metal ..... £120 per ton
CASTINGS, Wire Ropes, Tuyeres, &c., of all descriptions executed at the shortest notice.

DUNCANS' LUBRICATING OILS

WARRANTED FREE FROM GUMMINESS.

PALE INSTAR SPERM, OLIVE, and LARD, from 2s. 9d to 3s. 9d.
"DON ECONOMIC" LUBRICATING OIL, from 2s. 3d. to 2s. 6d. per gallon, according to quantity.
Mr. ALFRED HEWLETT, Wigan Coal and Iron Company, says—"I have used the Don Oil for nearly two years, and find it to answer exceedingly well for purposes of lubrication."
Consignees put on most favourable terms.
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SECOND-HAND RAILS, AND EVERY DESCRIPTION OF RAILWAY, COLLIERY, AND CONTRACTORS PLANT ALWAYS ON HAND.

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Manufacturers of all kinds of Iron, Steel, Copper, and Galvanised Wire Ropes, Hemp and Manilla Ropes, &c., Round and Flat Shaft Ropes, Crab Ropes, Guide Ropes, Hauling Ropes, and Galvanised Signal Strand, Ships' standing Rigging fitted complete, Patent Hemp and Manilla Hawsers, Warps, Cordage, Spunyarn, &c., &c., Manilla Yarn for Telegraph Cables, &c., Flat Hemp Ropes for Driving Bands, Steel Plough Ropes, Fencing Wire and Strand, Lightning Conductors, &c.

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AND EAST INDIA DOCK, BLACKWALL.

Original Correspondence.

THE IRON INDUSTRIES OF CUMBERLAND.

By RICHARD MEADE, Assistant-Keeper of Mining Records.

The iron ore of Cumberland is exclusively of that kind which is known mineralogically as red hematite; it is chemically an anhydrous peroxide of iron (ferric oxide), containing about 70 per cent. of iron, but the ore is of course rarely, if ever, found in a state of chemical purity. An analysis of red hematite from Cleator Moor, by Mr. A. Dick, gave 95·16 per cent. of the peroxide, corresponding to 66·6 per cent. of metallic iron. Most of the Cumberland hematite is of the hard variety, known as "blast ore," although in some places, as at Kelton and the adjoining mines, the soft variety is found; in the Furness district of Lancashire, on the other hand, this soft ore is predominant. The hard hematite occasionally occurs in masses, presenting a finely-lobed surface, whence the name "kidney ore," whilst in rare cases brilliant lenticular cystals of "specular iron ore" have been found. Associated with the hematite the following minerals occur—quartz, calcspar, brown spar, heavy spar, peroxide of manganese, and iron pyrites. The red hematites of Whitehaven, in Cumberland, and Ulverstone, in Lancashire, are by far the richest raised in the United Kingdom, and in the year 1873 the former contributed 8 per cent., and the latter 6 per cent. of the entire production. The ore since the introduction of the Bessemer process has been in great demand from the high character and purity of the pig-iron produced from it, and it is largely exported into other ironmaking districts, where it is extensively employed in admixture with other ores, giving an improved quality of iron.

By far the largest proportion of the Cumberland hematite occurs in the Carboniferous or Mountain Limestone. Around Whitehaven, where the carboniferous formation is well developed, it consists in its lowest part of about 250 ft. of massive limestone, in immediate contact with that division of the Lower Silurian system known as the Skiddaw slates. Above this massive limestone are a number of thin beds of limestone, shale, and sandstone or "whirlstone," making together a series of about 150 ft. thick; these beds are followed by a succession of sandstones and shales, varying in thickness from 180 to 300 ft. The hematite occurs chiefly on two horizons—one in the lower massive limestone, and the other in the thin beds of limestone and shale. Although the ore is often found in large irregular deposits in the limestone, and occasionally in the form of veins, it is more commonly spread out in the shape of flat deposits following more or less closely the general dip of the beds, this inclination being usually about 12° or 18° to the west. In thickness the ore deposits vary from 30 ft. to upwards of 100 ft.; a deposit sometimes suddenly enlarges or diminishes in thickness—thus producing what the miners call "rolls;" the deposits are frequently cut off by the presence of faults. In some cases, as in the Cleator Mines, the body of ore is divided into distinct masses by pillars of rock, extending from sole to roof. The roof is generally hard, and, consequently, large excavations are rendered possible without much artificial support. Although the forms of the deposits are very irregular, it has been remarked that, as a rule, they correspond in their extension with the direction of the magnetic meridian. Some of the deposits of ore occupy a large superficial area; that at Parkside, for example, and the adjoining mines, extending over about 60 acres.

The distribution of the ore deposits is very irregular, and their existence is only determined by borings, which have to be made almost at random. In the Whitehaven district the ore is distributed over an area extending about eight miles from south-west to north-east, with an average width of one mile. At Millom the ore-bearing limestone occupies an area of only about 1¼ square mile, or between 900 and 1000 acres.

In addition to the deposits of the Mountain Limestone there are veins of hematite in the Lower Silurian rocks of Cumberland; in some cases these occur in the Skiddaw slates, as at Kelton and Knockmurton; in others in the series of Green Slates, as at Dunnerdale; and in others, again, in the Coniston limestone, as at Waterblain. Nor should mention be omitted of veins of hematite in the granite of Eskdale. For the most part these veins in the older rocks have a general north-and-south trend, with a dip varying in direction and degree—whilst the the thickness of the ore, though often but a few inches, may reach as much as 12 or 14 feet. The geological position of the Cumberland hematites has been well described by Mr. P. Würzburger, of Dalton-in-Furness, and by Mr. J. D. Kendall, to whose valuable papers we are indebted for many of the foregoing facts.

RED HEMATITE.—The production of Cumberland and Lancashire in 1854 amounted to 579,924 tons, raised from 7 Cumberland and 15 Lancashire mines; in subsequent years the respective output of each county was distinguished. That of Cumberland is recorded as—

1860	Tons 468,782	1871	Tons 1,302,703
1865	897,059	1872	1,168,376
1870	1,221,303	1873	1,229,826

Of the production of the mines in the Whitehaven district the following statement will show its distribution, distinguishing the quantities carried by the Whitehaven, Cleator, and Egremont Railway, to be used in the blast-furnaces of the district, from that sent out of the county by railway and ship in each of the same years:—

Year.	Produce of Whitehaven.	By railway to Ironworks.	Exported by rail and ship.
1860	Tons 466,851	Tons 128,149	Tons 338,702
1865	678,831	214,433	464,398
1870	1,014,143	414,522	599,621
1871	976,874	568,340	408,534
1872	954,505	572,329	382,176
1873	1,021,690	680,864	340,826

The quantities sent by railway to the ironworks in the district do not include what was sent from the Hodbarrow Mines, on the Duddon, and other mines not using the Cleator system of railways. The production of the Hodbarrow Mines is as follows in each of the years:—

1864	Tons 73,993	1871	Tons 207,000
1865	117,330	1872	211,771
1870	174,000	1873	203,791

Of the ore exported from the Whitehaven district by railway and ship, it will suffice to show the destination of such exported quantities in each of the following years:—

Where sent.	1860.	1870.	1873.
South Wales	Tons 177,349	195,659	62,526
Staffordshire, Lancashire, and North Wales	43,748	18,401	360
Millom, Carnforth, &c.	—	84,367	128,960
Scotland	36,365	144,450	104,699
Newcastle and Cleveland	81,240	155,433	44,281
France	—	1,311	—
Total	Tons 338,702	599,621	340,826

A reference to the quantities exported since the year 1870 shows a considerable falling off, clearly pointing out that the growing requirements of the numerous blast-furnaces built and increasing is yearly absorbing more and more the produce of the district. It was not till the year 1872 that the details of production of the Cumberland mines was obtainable. The number of persons employed in and about the iron mines of Cumberland in 1872 was 4442; for 1873 the numbers exceeded 4500: this is exclusive of those employed in the iron and steel works. For comparison we give the returns for 1872 and 1873, as follows:—

	1872.	1873.
Agnes Pit	Tons —	11,987
Birks	10,773	23,467
Cleator	69,182	75,208
Cleator Moor and Bigrigg	73,913	77,351
Crossfield	63,068	84,338
Crossgill and Frizington	36,370	41,134
Dalmellington Company	—	2,650
Eskdale	3,000	—
Eskett and Frizington	36,760	44,992
Eskett Park	103,000	113,530
Frizington Park and Woodend	4,559	34,897
High House and Crossgill	20,091	31,288
James and John and New Pits	17,575	6,074
Kelton and Knockmurton	14,435	20,676
Lamplugh	—	411
Lamplugh and Holbeck	—	462
Montreal and Crossfield	241,048	248,075
Moor Row and Winder	—	88,160
Parkside and Eskett	200,000	114,465
Scalelands	—	18
Winder Gill	4,478	1,442
Woodend	16,928	—
Other mines	48,824	—
Yeathouse	—	1,085
Alston Moor	2,000	3,032
Clifton Colliery	—	39
Ellenborough Colliery	—	950
Hodbarrow	211,771	203,791
Melgramfits Colliery	—	109
Waterblain	500	215
Total of Cumberland ore	1,168,276	1,229,826

Giving an average weekly output in 1872 of 22,460 tons, and in 1873 of 23,650 tons, and 8 per cent. of the total production of iron ore of the United Kingdom in 1873. The value of the ore in 1872 was 1,460,345*l.*, and in 1873 1,536,708*l.*, or 25s. per ton, while in 1858 it varied from 11s. 6d. to 13s. 6d. per ton.

The red hematite of Cumberland yields a high percentage of metallic iron, and is described as follows in the "Iron Ores of Great Britain," Part I.:—

"CLEATOR MOOR HEMATITE (By Mr. A. Dick).—Compact, red hematite; easily scratched by a file; lustre, earthy; colour, purplish grey, streak bright red; fracture, uneven, showing cavities lined with crystals of specular iron, and containing in some cases quartz."

The total amount of iron contained in this ore is 66·6 per cent.; another variety gives 63·25 per cent., while a third hematite gave 69·1 per cent. An average of these analyses may be taken as 66 per cent., and this fairly represents the produce of the ore.

PIG-IRON MANUFACTURE.—In the year 1854 the only ironworks in Cumberland were those at Cleator, of the Whitehaven Iron Company, with two blast-furnaces in which coal was used; and at Duddon, of Messrs. Harrison, Ainslie, and Co., making charcoal pig-iron, the only works of the kind now existing in Great Britain, excepting the Backbarrow Works, near Ulverstone, owned by the same firm, and they are now, we understand, using some coke. The make of pig and charcoal-iron did not in this year amount to 20,000 tons. In 1857 the furnaces at Harrington and Seaton Works were put in blast, and in 1858 the Workington Iron Company commenced the manufacture of pig-iron with two furnaces. In 1863 the West Cumberland Works started with three furnaces in blast; again in 1870 the Maryport, Millom, and Solway Companies blew in their furnaces; at this period there were 24 furnaces in blast, the total number built being 33, and the make of pig-iron 255,178 tons: while in 1872 three new companies appear—the North of England and Moss Bay, situated near Workington, and the Parton Works of Messrs. Blair and Vance, situated between Whitehaven and Workington; the two first-named were in operation in 1873, while the Parton Works have just started.

The following is a list of the ironworks in action in 1873, with the names of owners and the number of furnaces built and in blast, the make of pig-iron being 456,877 tons:—

Works.	Owners.	Furnaces. Built.	In blast
Harrington Hematite, Whitehaven	Bain and Paterson	4	4
Maryport	Gilmour and Co.	6	6
Millom, Carnforth	Cumberland Iron Mining and Smelting Company (Limited)	8	4½
Solway Hematite, Maryport	Solway Hematite Iron Co. (Lim.)	4	4
West Cumberland Iron and Steel Company, Workington	West Cumberland Iron and Steel Company (Limited)	6	4
Cleator Moor Hematite	Whitehaven Hematite Iron Company (Limited)	6	4
Workington	Workington Iron Co. (Limited)	6	4
North of England, Workington	North of England Iron Company	2	1
Moss Bay, Workington	Hematite Iron Company	3	2
Parton	Blair and Vance	2	0
Duddon	Harrison, Ainslie, and Co.	1	0
Total of Cumberland		48	33½

For general reference it will be found convenient to note for the following years the make of pig-iron, with the number of furnaces built and in blast:—

Year.	Furnaces. Built.	In blast.	Make of pig-iron.
1857	9	6	30,515
1860	13	8	87,950
1863	15	10	106,090
1866	18	12	136,343
1869	18	9	129,107
1870	33	24	256,178
1871	34	28½	336,569
1872	43	33½	440,575
1873	48	33½	456,877

Taking the return for 1873, it will be found that the average make of each furnace was 13,638 tons, while the pig-iron made amounted to 7 per cent. of the total production of Great Britain.

In the make of pig-iron in Cumberland in 1873 there was employed of hematite, the produce of the county, nearly 800,000 tons, giving 35 cwts. of ore to each ton of pig-iron made, but to this must be added the hematite imported from Spain principally, amounting to 40,172 tons, and of aluminous iron ores from the county Antrim, in the North of Ireland, of which not less than 25,000 tons was used advantageously as a flux, giving a total of all kinds of ore used in the make of 456,877 tons of pig-iron as 865,172 tons, or an average of 38 cwts. of ore to each ton of pig-iron made.

The Irish ore, as stated above, is used with considerable advantage as a flux in the smelting of the hematite, as it contains from 28 to 34 per cent. of alumina, and from 35 to 40 per cent. of metallic iron, the Spanish ores giving, however, a higher percentage. There was also employed a small amount of forge and mill cinder, containing from 40 to 70 per cent. of iron, which may be regarded as equal to the richest iron ores. In the calcination of the hematite, when this is done, there is a loss of from 5 to 6 per cent., which shows its more valuable character when compared with the argillaceous carbonates, where the loss amounts to nearly 30 per cent.

In the reduction of the ore in 1873 there was used of coal, all purposes included, 1,079,118 tons, or an average consumption of 47½ cwts. to each ton of pig-iron made; while in the year 1872 the actual quantity of coal used was 1,077,783 tons, or nearly 49 cwts. of coal to each ton of pig-iron made. It will be well to mention that Durham coke is largely employed in the blast-furnaces of the district, but in all cases in these computations its equivalent in coal has been taken.

A great economy of heat has of late years been attained by the utilisation of the waste gases of the blast-furnaces, which are conducted to the heaters and boilers by suitable arrangements adapted to the furnaces.

PUDDLING-FURNACES, Rolling-mills, and Bessemer converters. In 1872 there were five works engaged in the manufacture of malleable iron and steel, employing 86 puddling-furnaces and 11 rolling-mills. In 1873 the same works, of which the following is a list, had 83 puddling-furnaces and 11 rolling-mills in operation:—

Name of Works.	Name of Firm.	Puddling Furnaces.	Rolling Mills.
West Cumberland	West Cumberland Iron and Steel Co.	38	3
New Yard	Henry and Thomas Kirk	16	3
Derwent Rolling Mills	The Moss Bay Hematite Iron Company	12	1
March Side	Joseph Price, jun., and Co.	6	1
Ellen Rolling Mill	Penton, Hampton, and Jackson	11	3
Total		83	11

The four first named are situated near Workington, and the last in the list near Maryport, while the West Cumberland Company have in activity four Bessemer converters, each of a capacity of 7½ tons, engaged in the manufacture of steel. It has been ascertained after a careful enquiry that in each of the years 1872 and 1873 the quantity of coal used in the above-named works amounted to from 100,000 to 110,000 tons. The quantities of the various kinds of iron made are not known, but it is now generally regarded that in the manufacture of iron and steel 50 cwts. of coal (or its equivalent in coke) is necessary to reduce the ore in the blast-furnace to the state of crude iron, and that a further 60 cwts. of coal is employed, all processes included, such as puddling, re-heating, rolling, &c., to complete the operation of conversion into malleable iron and steel.

TIN-PLATE WORKS.—But one establishment engaged in this industry exists in the county—the Derwent Works at Workington, conducted by Messrs. W. Griffiths and Co. In the year 1873 there were in Great Britain 69 firms making tin, terne, and black plates, giving a total production for the year of 2,685,045 boxes, each box weighing upwards of 1 cwt., and a total weight of not less than 165,000 tons. Taking an average of the make for the Derwent Works, we would have about 38,910 boxes, representing an average weight of tin-plates of nearly 2000 tons.

In conclusion, we understand that in addition to the furnaces just put in blast at the Parton Works, two new furnaces are erected at Millom by the Cumberland Iron Mining and Smelting Company, and that some two or three new manufacturing establishments on the West Coast are nearly ready for being put in operation, while the make of Bessemer pig is on the increase, the Bessemer steelworks being fairly well employed, and great hopes are entertained of increased activi ty in the year 1875.

MINING IN THE PACIFIC STATES.

ANNUAL REVIEW.

[FROM OUR AMERICAN CORRESPONDENT.]

The year closes with a greatly improved feeling among all classes, but more particularly among those interested in the mines of the Far West. The States and Territories on the other side of the Rocky Mountains, it is true, have not suffered from the effects of the financial crisis to anything like the extent which the Atlantic and Middle States have. For the past six years but little Eastern capital has found its way into Western mines, and, in fact, the mere mention of a gold or silver mine to a New York capitalist recalled excruciating memories of 1867 in connection with Gunnell Gold, Quartz Hill, Corydon, and a host of other similarly unprofitable adventures. Many of these properties were really worthless; the majority, however, were financial failures, caused by mismanagement, resulting from ignorance or dishonesty, or both combined. This state of things has brought the mining of the precious metals into great disrepute among Eastern people, and has naturally prevented a great deal of capital from being usefully employed in developing the mineral resources of the Far West. One good effect has, however, followed: the Western miner has been compelled to rely upon his own exertions for developing his property, and to cease wasting his time in trying to "negociate" claims in Europe and the East. The bullion product of the United States shows a steady increase every year. For the year ending last July it aggregated $71,750,000, of which Nevada furnished a large proportion. Up to October of this year the returns showed a probable increase of 33⅓ per cent. on these figures for the coming year. This calculation was made, however, prior to the great "strike" on the Comstock lode, which will, if all that is said of it be true, more than double the year's bullion product.

The bullion production of the United States and Territories since the discovery of gold in California, in 1848, has been as follows:—

Year.	Gold.	Silver.	Totals.
1848	$ 10,000,000	$ 50,000	$ 10,050,000
1850	50,000,000	50,000	50,050,000
1855	55,000,000	50,000	55,050,000
1860	46,000,000	150,000	46,150,000
1865	53,225,000	11,250,000	64,475,000
1870	50,000,000	16,000,000	66,000,000
1873	36,000,000	35,750,000	35,750,000
Total	$1,240,750,000	$186,050,000	$1,427,800,000

It is interesting to notice how the production of gold has decreased as the silver has increased, and how the aggregate steadily increases.

Regarding the Comstock lode, we receive the most fabulous details from the Pacific Coast concerning the richness of the great bonanza, or chimney, in the vein. Fabulous as these details are, they seem but a fitting climax to the past history of this wonderful silver lode. The general yield of the ore which has made its reputation has seldom exceeded $50 per ton, and the average yield for the past four years has been about $20. Now, however, we are told that an enormous bonanza, the full extent of which has not yet been developed, is composed of ore which averages over $600 per ton. Many hundreds of tons, it is said, will average over $1200 per ton. It is estimated that there is over $43,000,000 worth of ore in sight above the 1550 foot level of the Consolidated Virginia. In the California the estimates vary from $50,000,000 to $150,000,000. Naturally the excitement in the San Francisco Stock Exchange has been intense. It is related of one firm of mining brokers that they bought heavily of California, Consolidated Gregory, and Ophir when the prices were low, and held them till the great rise took place; it is said that their profits to-day are upwards of $50,000,000. Senator Jones, of Nevada, is said to have cleared $13,000,000 in a week by the advance. Even in New York it is a general subject of conversation, and considerable dealings have been made by telegraph to San Francisco.

In order to give some idea of the profitableness of American mines when they are properly managed, I submit the following table, compiled from official records:—

COMPARATIVE TABLE OF VALUES OF LEADING MINES ON THE COMSTOCK SILVER LODE, NEVADA.

Mines.	Lowest price, November, 1870. No. of shares.	Rate.	Value of mine.	Highest price, April and May, 1872. No. of shares.	Rate.	Value of mine.	Highest price, June, 1874. No. of shares.	Rate.	Value of mine.	Highest price, December, 1874. No. of shares.	Rate.	Value of mine.	Total assessments, November, 1870, to December, 1874.	Total dividends, November, 1870, to December, 1874.
Virginia Consolidated	11,600	6	$ 58,000	11,600	150	$1,740,000	108,000	85	$9,180,000	108,000	585	$63,180,000	—	$648,000
California		Not	organised.		Not	organised.	108,000	38	4,104,000	109,000	500	54,500,000	—	—
Gould and Curry	4,800	71	340,800	4,800	560	2,688,000	45,000	24	1,152,000	45,000	63	2,834,000	$918,000	—
Savage	16,000	26	416,000	16,000	725	11,600,000	16,000	84	1,344,000	16,000	146	2,336,000	1,040,000	—
Chollar Potosi	28,000	74	2,072,000	28,000	380	10,640,000	28,000	81	2,268,000	28,000	91	2,548,000	280,000	1,960,000
Ophir	16,800	3	50,400	16,800	140	2,352,000	100,800	19	1,915,200	100,800	202	20,361,600	420,800	—
Hale and Norcross	8,000	104	832,000	8,000	750	6,000,000	16,000	57	912,000	16,000	73	1,168,000	380,000	320,000
Crown Point	12,000	3	36,000	12,000	1825	21,900,000	100,000	84	8,400,000	100,000	52	5,200,000	—	10,720,000
Yellow Jacket	24,000	31	744,000	24,000	325	7,800,000	24,000	90	2,160,000	24,000	180	4,320,000	600,000	444,000
Belcher	10,400	2	20,800	10,400	1525	15,860,000	104,000	81	8,424,000	104,000	59	6,136,000	2,246,400	12,064,000
Alpha	6,000	5	30,000	6,000	240	1,440,000	30,000	11	330,000	30,000	40	1,200,000	6,000	—
Imperial	4,000	21	84,000	4,000	480	1,920,000	100,000	7¾	775,000	100,000	21	2,100,000	660,000	—
Kentuck	2,000	31	62,000	2,000	700	1,400,000	31,000	17	510,000	30,000	23	690,000	140,000	—
Total			$4,746,000			$35,340,000			$41,504,200			$163,2 3,600	$6,666,000	$26,156,000

Value of Mines, November, 1870	$26,156,000	$ 4,746,000
Total dividends to December 31, 1874	6,666,000	
Deduct assessments to December 31, 1874		
Net returns from all the mines	$19,490,000	
Present value of all the mines	166,263,600	= 185,753,600
Total profit		$181,007,600

A little study of the preceding table is interesting. The Belcher Mine, for instance, was selling in November, 1870, at $20,800. Since that time it has declared $12,064,000 in dividends, and called in assessments of $2,246,400; the present market value of the mine is

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52, Broadway, New York. Mining Engineer.

$6,136,000, thus showing a net profit on an investment of $20,800 made in November, 1870, and closed out in December, 1874, of $15,932,800. Virginia Consolidated was selling at $58,000; it has made no assessments, it has divided $648,000, its present price is $63,180,000, being a net profit of $63,770,000. As will be seen from the table the profit on all the 13 mines in the period of three years and two months amounts to $181,007,600. The dividends declared during that time amount to $26,156,000, and the assessments levied to $6,666,000, leaving the net returns $19,490,000 on shares which were selling at only $4,746,000. It must be borne in mind that no dividends have as yet been declared from the result of the last great strike. All this has awakened a general feeling of interest in mining enterprises, and many people think that the prevailing apathy in the Eastern money market will find vent in a new era of mining speculation. If it does I trust that capitalists, both here and in Europe, will exercise a little of the common sense which they would ordinarily exercise in the course of their regular business, and not plunge wildly and recklessly into mining schemes, spending thousands on property which they do not have investigated by competent mining engineers. As a general rule, the capitalist seems to place more reliance on the report of the "honest practical miner." This individual has been the cause of more disastrous mining adventures than any other. As a rule, he is thoroughly ignorant of everything except the running of a drift or the sinking of a shaft in Cornwall, for he invariably hails from Redruth or its neighbourhood. He is an excellent mining labourer, but his ideas, obstinately held, are gauged by the conditions existing in the mine in which he was brought up at home. Take those conditions away and he is entirely at sea without realising the fact, his opinion upon the value of any other mine is not worth that of an intelligent bricklayer.

Purchasers of mines may be divided into two classes—those who work the mine for the benefit of the shareholders, and those who work it merely in order to raise and depress the market value of the shares. What mishaps may befal this latter class merit no sympathy. The former is a much larger class than is generally supposed, and as their object is legitimate, and one tending to increase the prosperity of the country, it is deeply to be regretted that they so often come to grief. In 99 cases out of 100, however, they are themselves to blame for their own want of success. The usual programme is this. Some irresponsible "cuss" who can talk well, and boast of his large acquaintance among capitalists, &c., visits the mining regions, selects some played-out property, or else a mere location upon which work enough has not yet been done to show whether it has any value at all, obtains the refusal of it for (say) $10,000 for six months. He then has a report made by a "Cornish mining captain," showing the immense value of the claim—assays going into the thousands of ounces to the ton are made, and duly certified to. Armed with these documents he starts for the Atlantic Coast or Europe. Arrived at his destination he enlists the services of some promoter or go-between who can reach the capitalist, dividing his spoils generally with him. The price to the capitalist will be at least $200,000. Here the enterprising individual redeems his bond, and retires from the scene, netting, perhaps, $50,000 by the operation. Then the capitalist and his friends, who may be perfectly honest in wishing to get a valuable poperty, send out another "Cornish mining captain" to examine and report upon the value of the property. This gentleman is taken charge of by the vendors in the mining region, and it is perfectly safe to wager beforehand that his report will far more than confirm the original report of the first "Cornish mining captain."

The capitalist and his friends form a company which purchases the mine from them for (say) $500,000, they taking modestly, perhaps, one-half in shares fully-paid. The capital will be at least $1,000,000—$200,000 (say) for working capital. The shares start at a premium, but it is remarkable how quickly their price will represent the real value of the mine—in other words, be unsaleable. The working capital will be squandered by an ignorant blockhead or a clever rascal put in charge of the property, and the shareholders will wonder why there are no dividends. If a merchant or banker is going to engage in a new branch of his business, requiring some technical knowledge of the commodity to be dealt in, does he select a man who knows nothing about that business to investigate the matter for him? Does he not rather select a chemist (if chemical knowledge is required) of undoubted standing in his profession? And does he not also bring all his own business common sense to the aid of his knowledge of finance to guide his judgment? Why, then, does he act in such an idiotic manner when he invests in mining property?

D. ERNEST MELLISS.

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MINING ON THE PACIFIC COAST—NEVADA.

TYBO MINING DISTRICT, NYE COUNTY, NEVADA, AND THE TYBO CONSOLIDATED SILVER MINING COMPANY (LIMITED) OF LONDON—No. IV.

SIR,—Having in my three former letters cast a hurried glance at such matters as I deemed of most importance and of most consequence to your readers, I will now turn my attention to the mines of this locality, notice how developed, estimate their value and extent, and exhibit some evidences in support of the bright future which awaits them. Among the most notable, best opened, and extensive of these are the series which comprise the property of the above incorporation. The titles of these are secured by United States patents, thus doing forever away with the corroding doubts and anxieties which a threatened and expensive lawsuit usually involves in this land of silver and sage brush; and, *apropos* of the foregoing, I cannot refrain from adding a word or two by way of illustration. In doing so I do not wish to become invidious in my remarks, nor do I desire to give utterance to aught of a nature to give offence to honorable minded Americans at home or abroad.

The industrial speculative tendencies of our people are matters that are well known. There is not, perhaps, to be found on the globe a more enterprising and speculative being than the American, and in no part of this broad Continent has he such peculiar facilities given him for their employment as in Nevada, or which affords to him such an unbounded scope for the carrying out of his ambitious projects. Here, then, he flourishes and prospers apace, because of his early initiation into "the ways that are dark and tricks that are vain," so largely practised in frontier life. Here, too, he need not languish for the want of a field in which to display his business qualifications, and to do him credit he is not in the least slow to avail himself of such circumstances as offer. Keen and shrewd, both by nature and education, the acquisition of riches and personal agrandisement are the guiding stars of his life. Trade and barter he soon throws aside, and boldly launches out into the mining world, and soon becomes a standard authority upon rocks, veins, lodes, dips, spurs, and angles, and such other matters as properly belong to the part he has assumed—a mining expert. There are many representatives of his class to be met with in every noteworthy town and mining camp throughout the State, who not inaptly come under the generic term—mining sharp, &c. Our floating population is, owing to the unsettled state of society, and the migratory character of our people, at times pretty large. The mining sharp and his kindred associates have done much to bring this State into disrepute among foreign mining operators, and to stamp the American name and character with ineffable disgrace. I must, however, in justice observe that the mining sharp belongs not exclusively to this country, though it has to suffer in a more or less degree from the results of his dishonest acts. Mother England has, I must say, contributed her full quota of insinuating oily tongued adventurers, who from time to time have taken a prominent part in many of the mining swindles which have been perpetrated upon their own countrymen. And I cite the many cases of this character in which they were mainly instrumental in deluding their own brethren; nor need I relate how they made common cause with men of the same ilk in this State and Utah, whom they found ready to take a hand in any undertaking, no matter how nefarious, so long as there was money to be realised from it. It was an easy thing to manufacture a glowing report in commendation of mines, whose chief merits consisted in a few segregated bunches of ore, opened in such a manner as to leave the impression upon the mind that they were of vast proportions, as well as inordinately rich. We find, whenever and wherever English capitalists have been fleeced in mining transactions in this State, or in the adjoining Territory of Utah, that many of the men whom they themselves selected, and sent out to examine and report, betrayed their confidence by lying reports, and when the sale was concluded pocketed their share of the plunder. These facts have become too notorious to be at all denied. These are among some of the things which the English public should remember, and against which it should in future try and guard. Men of prominence and business capacity, noted for their honour and integrity, are the kind of men that are needed for the faithful execution of such commissions. Then the mining sharp would soon find himself in a like situation with Othello, while the many worthy mining properties scattered over the State would find ready purchasers.

There is yet another phase of this subject to which I must revert. Englishmen may say, and with some show of propriety, too, that our laws are too lax, and that they are sometimes prostituted to the lowest and worst of purposes, and that justice itself is but an abstract idea, and but another name for judicial corruption of the most flagrant and debasing character. They may also, without injustice, point out the unscrupulousness with which adverse claims have been set up to valuable properties to which the so-called claimants had no right in either law or equity. How juries have been approached, and the judicial ermine itself sullied, by the questionable acts and legal rulings of its unworthy wearers. These, and a thousand other things they might say that are inseparable from a newly-settled mining country. Those times are, however, I am glad to note, fast disappearing in the gloom that surrounds them, and with them the blacklegs that infested the mining towns and composed the State. With them legal right was a matter of very little importance, it was simply a matter of might against right, or of money and hard swearing against honesty and truth. These things were judiciously managed by old and experienced hands, who generally made a liberal distribution among their adherents of the stuff which tempted the miserable Iscariot into the crime of betraying his master.

The potency of money is well known and appreciated, and to acquire it, by whatever means, is the great end and aim of man's existence. He is the same avaracious being in the 19th that he was in the first century; his passions, feelings, and motives remain unchanged, and ever will. They are as strongly marked in this era of religion, refinement, and civilisation as they were when Romulus, with his bronze plough and bovine yoke, outlined the limits of the seven-hilled city.

But to resume after this long digression. In view of the above facts it will not be denied that the security of perpetual title to the above mines is of the highest import, and should immeasurably enhance their value. These mines are the "Two G's," containing 1200 lineal feet on the course of the lode, running south-east; "Casket," first extension of the former, on the north-west, having a course of 660 lineal feet; the "Crosley," with 400 ft., next adjoining in the same direction; and the "Lafayette," embracing 1200 lineal feet, making in all 3460 lineal feet of valuable mining ground. The last-named location is segregated on a side vein, or on what is considered an offshoot from the parent ledge. It bears slightly to the westward of the others, and exhibits the same vein formation and quality of ore as far as it has been explored. There is also sufficient work done upon these to demonstrate their claim to being true fissure veins. The veins, as are all found in the district, bear south-east and north-west, and crop out boldly in an unbroken course of 5000 ft. The hills are everywhere in the neighbourhood seamed with silver-bearing cross veins, which by-and-bye will afford profitable employment to labour and capital. They are usually found well outlined between lime and porphyry casings—or, to speak more properly, encased between well-defined foot and hanging walls. This is the case with the 3460 ft. of vein belonging to the Tybo Company. These mines, previous to their purchase, were mortgaged to parties at the county seat, Belmont, for $20,000, and in default of payment were about to be foreclosed. At this critical juncture John B. McGee, late superintendent of the Richmond, at Eureka, made overtures of purchase to the owners; but, though these gentlemen were closely pressed at the time, they exhibited an indifference truly wonderful. The property was known to be good, and the developments justified their expectations of securing a large price for it. In this they were not, however, disappointed, for the practiced acquaintance which the above gentleman had with mining matters readily enabled him to appreciate the advantages which would result to himself and colleagues from its possession, and accordingly closed with the terms of the owners. The price paid was a large one, it is true, but the amount expended in developing and improving the property since then is considerably larger. Yet, however large the outlay has been, it cannot be denied that it has produced commensurate results. The amount thus spent is but a mere bagatelle in comparison to the magnificent property it has helped to develope, which, without prejudice, I pronounce by far the most extensive and valuable one within the broad compass of Eastern Nevada.

It is opened both by shafts and tunnels on the course of the vein a distance of 2600 lineal feet, thus leaving but 860 feet more to be tested, and this we know to be in no degree inferior in mineral wealth to the former portion. The shafts are vertical, and vary in depth from 65 to 85 feet. They are sunk on the Casket, Crosley, and Lafayette. The Casket shaft tapped the ledge at a depth of 65 feet, the Crosley at 85 feet, and the Lafayette at a depth of 75 feet; and all three exhibit the same quality of ore, with this difference, however, that the latter's ore is more suitable for smelting than that of either of the others, which are best adapted for the milling process. The latter is, in consequence, largely opened, and its underground workings have produced some remarkably fine high-grade ores, rich in sulphurets, oxides, and carbonates, with just enough of ferruginous matter to assist in their reduction. The two former are, therefore, idle, and will remain so, too, until the mill is built, and ready for active operations, which, as previously stated, will be about May 1.

The "Two G's" Mine is located in the northern slope of the mountain of the same name, and its vein crops out boldly between its casings of porphyry and silicious lime, from point of discovery to its extreme south-eastern limits. Precipice Canyon, which courses east and west, runs partly through the Casket and partly through the Lafayette, and it opens out to some extent from the point of connection between the "Two G's" and Casket, whose whole extent is embraced within its limits, while the Crosley courses to the north-west on the opposite stopes. The altitude of the highest point of outcrop of the "Two G's" vein cannot be less than 300 ft. above the level of the canyon. The foregoing imperfect description will, I trust, in some measure account for the depth to which the Casket, Crosley, and Lafayette shafts had to be sunk ere they reached the lode. The hills are very steep at this particlar point, rising on either side of the canyon to an elevation of nearly 2000 ft., thus placing their highest peaks about 8500 ft. nearer to the clouds than is salt water. Their northern slopes and summits are at this time mantled with snow pure and fleecy, but winterish in aspect, and making heavy overcoats, furs, and heated stones indispensable articles of luxury to the tender-raised Caucassian, while the half-clad children of the primeval forests roam abroad amidst their ancestral hills, apparently impervious to either frost or snow, or to the ice-laden winter's blasts. Their indifference in this respect is such that they never think of providing either roof or shelter of any kind, but retire at sundown to the elevated mountain slopes, and then in family groups range themselves in a circle, and go to sleep with their feet to the fire in the centre.

Forgetful that I was discoursing on mines and mining, I have unconsciously wandered from my subject, and must, therefore, close this article, whose length admonishes me that if I would retain the goodwill of the Journal I must now write Finis, and leave the balance to next week's letter.

J. D. POWER.

Tybo, Nye County, Nevada, Dec. 21.

TECOMA SILVER MINING COMPANY.

SIR,—The shareholders appear to have caught at the proposal of "Joe Gordon" in a manner which induces the belief that they soberly imagine the proferred lease will be carried out upon the terms indicated. It does not appear to have occurred to any of them that if "Joe Gordon" seriously intended what he proposes he could have obtained all and more than he desired upon a very much more favourable basis—indeed, had he waited a little longer the strong probability is that he would have got the mines at his own price. We must not allow ourselves to be dazed by the statement that Mr. Maxwell is prepared to go out to take the management, depending for his remuneration upon a percentage of the profits realised, nor should we allow ourselves to be misled by other equally indefinite allusions. Has it not occurred to some that the whole affair has been introduced in order to set at rest the question of litigation between the shareholders and the initiators of the company, for if the lease be granted any legal remedy which the shareholders may have is at once and for ever waived? The question is whether it is better for us to accept the proposal for whatever it may be worth, or press forward our legal claims? The communication you published last week only confirms my doubts.

A SHAREHOLDER.

Jan. 20.

FLAGSTAFF SILVER MINING COMPANY.

SIR,—There are again strange rumours afloat concerning the peculiar and undesirable position occupied by this company in relation to its connection with, or, rather, alienation from, the vendor as the possessor of the company's property. Those who profess to be behind the scenes say that the farce which took place last autumn will be re-enacted on Feb. 1, that once more promises of an adjustment of existing complications will be held out, and that (upon terms) the shareholders may be allowed to re-possess their own property. Others distinctly assert that the vendor will no longer hesitate to accept terms, and simply because since autumn last the mine has continued to very seriously decline in value, its general prospects being by no means of an encouraging character.

When I last addressed you the general opinion was that the vendor intended to come to equitable terms, but it will be recollected that then I cautioned the shareholders against being thus misled. The result, as is too well known, was that instead of an arrangement, the vendor left Paris for America, never (we were told) to return. But he has returned, and therewith is revived a resumption of hazy speculations, that all matters will now be set right. Will they? Let us look at the probabilities. We were told in the autumn that the one reason why an arrangement was ensured was that it would promote the pecuniary interest of the vendor, who had purchased a very large number of shares. The bottom has been knocked out of this argument by the hard fact that the whole of those shares have been sold; if it were the vendor's interest then to complete arrangements, it is evidently not so just now. The relative positions have ominously changed—then the vendor held largely, now those connected with the company (but not with the mine) hold largely! What, then, are the chances, looked at by the light of past experience? True, if the mine be in the condition indicated, the vendor having satisfied the whole of his real or imaginary demands upon its resources, may magnanimously "meet the wishes of the shareholders," who (if rumour be correct) will find a comparatively exhausted property. Will shareholders be again thus hoodwinked?

For months to come operations must necessarily cease at the mine, and the shareholders having waited so long can well afford to do so a little longer—in the meantime let them press forward their legal claims, for it is but too clear (as the Chairman said at the last meeting) "the vendor is much more anxious for a settlement than the company." Shareholders, be honest and just to yourselves!

Jan. 20. A MEMBER OF THE STOCK EXCHANGE.

MINING IN NEW SOUTH WALES—ITS SUDDEN RISE AND DEPRESSION.

SIR,—Some 10 years since "free selection of land" became the law, by which anyone could secure a freehold in the country districts, up to the extent of 320 acres, by paying down 5*s.* per acre, and the interest at 5 per cent. on the balance of 15*s.*, making 1*l.* per annum. This led to suddenly settling between 20,000 and 30,000 people broadcast over the half-million square miles of New South Wales; and after the first year's necessary clearing and building were done, and a crop put in, the bulk of them eked out a living by starting bullock teams, and so helping to cheapen carriage to all parts of the interior, or else went to the known gold fields for a few months in each year, or prospected for new ones; and as gold, copper, and other minerals exist more or less almost throughout the whole colony, of course many rich finds were thus made; and wherever a large "rush" took place it made a splendid market to the neighbouring squatters and farmers. Thus the far interior was being surely opened up, and wealth slowly but surely developed in different districts.

A few years later, and the railway at last was carried over the mountains both west and south, and goods delivered in Bathurst within 24 hours, which previously had never been less than 14 days, and frequently nearer as many weeks, on the road. Dispatch also brought cheapness with it, and still further helped to stimulate trade everywhere; and as both squatters and free selectors had had bad years of drought, rust, &c., it was time they did get a turn. New South Wales was eminently a sheep and cattle country, and the Australian squatter and the cautious Sydney merchant alike looked askance on mines and miners, and the latter class had to trust entirely to their personal exertions, or the occasional credit given them by local storekeepers.

About 1871, in the south, north, and west, suddenly came news of rich mineral finds, which aroused attention in Sydney suddenly to a degree almost proportionate to its former indifference and distrust; and when blocks of golden stone, weighing several pounds each (and more gold than quartz) were sent down from the Hill End (Tambaroora) claims, notably from Holman's and Krohmann's, and certain information came down of crushings of thousands of ounces at a time, and claim after claim on the line kept striking the same rich veins; then a furor suddenly set in, and with 3,000,000*l.* lying idle in the banks, a splendid year or two for the squatters, with news of wool rising by every mail, and the general prosperity of the colony, from the great success of all classes and of the free selectors, and the easier transit everywhere, the mania became general, and the hitherto exceptionally distrustful Sydneyite, seeing his "country cousins,"—who, living in the interior, must surely know what they were about—also speculating, at once became the wildest of investors; and I need hardly add that all the "scoundreldom" of the diggings flocked down to Sydney with specimens and reports (?), and found the pigeons not only waiting to be plucked, but eagerly rushing after them.

Any 5-acre lease, on any known line of reef, was eagerly snapped up, a company formed, capital raised, and, of course, crushing machinery at once ordered; managers, booted and spurred, sent up, weekly reports (and pay-sheets also) sent punctually down with surface specimens—a bit from the last shot at the 30 ft. level, &c. Then accounts of the "hardness of the country," to account for the slow progress and the cost of sinking, from 3*l.* up to 10*l.* even per foot, and so on. All these preliminaries took the first six or nine months, by which time the crushing plants were about ready; then they had to be sent up country for erection, and until they were up and ready for crushing "hope told a flattering tale," because as the managers sagely observed, when directors in Sydney remarked they saw very little gold in the sample sent down, and those who did visit the mines saw still less in the heap at grass, that the best and steadiest yielding reefs in Victoria (our then authority in gold mining) showed very little gold in the stone.

There are, perhaps, not 50 really qualified managers in the colony, but as there were by this time over 1500 companies who must get to work, plenty of men with certificates (?) come to the front, spend money royally, and of course snugly, drove tunnels instead of sinking shafts, and when they did sink often took the wrong side of the underlie, and could not have cut the reef if they had sunk to the earth's centre. In short, to sum up a sad and sorry story, ignorance, recklessness, and roguery kept on emptying the pockets of the Sydney shareholders: till at last, after 18 months of it, both pence and patience were lost, and literally hundreds of mines were stopped working, even when in a great many instances the prospects had become sufficiently developed to really warrant going on hopefully; and there are at least 1000 shafts sunk well on to where reefs are all but sure to be cut at a likely depth, and all the preliminary dead

work and loss of time thus thrown away by the disheartened shareholders to be now taken ready advantage of by the first working party of miners who can raise 50*l.* to finish off what is so nearly done to their hands. As for the crushing plants, they stand scattered over the country, nicely housed, most of them never used even, and in the hands of the banker for as many hundreds as they cost thousands.

As to the thousands of victimised shareholders in Sydney, very many were absolutely ruined, most of them seriously involved, and all of them dispirited, and though, now that they have time to reflect, they clearly see the principal cause of failure, and know that now, with their experience, three out of every four of the abandoned mines would pay well, with probably only a few more hundreds to complete what is nearly done, still they have too much leeway to make up, and the bankers look so askance at anyone who is now hinted at as connected with mining, that they perforce let it alone; and the capitalists who could afford to risk it find more congenial employment for their funds in buying up the properties of smaller speculators, whose banks are putting "on the screw."

Of course, the working miners made a "good time" of it out of companies' moneys whilst the mania lasted, and are now making good livings in the mines; and so the gold still comes down, and must continue to do so, as new finds are constantly being made, hundreds of miles apart, proving that the bulk of the mines themselves were not swindles, but only the way they were first worked, and there was never a better nor so good a time as now for the successful employment of capital, if only honesty and ability be joined with it.

Whilst the hunting out of gold reefs was the only thing thought of, the copper lodes, accidently discovered, were passed by; but now that the fever is over, and the extension of the railway from Bathurst to Orange lays open the whole 60 miles of mineral belt of the country, and mules carry sure and cheap to the new smelting furnaces at the coal outcrop at Bowenfels, there is likely to be a great increase in copper mining, as lodes exist through some hundreds of square miles of country from the Fish river to the Canoblas mountains, and the new line will tap it all, and now that coal can be got make poor ores even pay well.

We have completely got over our fever, and nearly got over our fear, but we have not yet got over our losses; and until we do that (at least partially) we must continue to see our Victorian friends (whose mines are fallen off terribly) coming quietly over the border, and bringing their long experience to bear profitably upon our partially developed resources, reaping where we have sown, and making their gain out of our losses.

As respects our tin mines, the same general remarks apply also to them, only if we were ignorant of gold we were still more so of tin; and although there are scores of lodes known to exist only one is being opened out; and as for alluvial, there are literally thousands of acres that would pay handsomely if properly worked, and especially at the end of next year, when the Northern Railway will reach the mines, and save at least 8*l.* per ton carriage on the ore.

The mines of New South Wales are varied, plentiful, and undoubtedly good; and now that access is made at last certain to them, and that the rogues and fools have had their day at them, is the time for the wise man and the honest to step in and reap the profit.

Sydney, Nov. 21, ——— R. ADAMS.

MINING IN QUEENSLAND.

SIR,—As copper mining is again reviving in this colony, it may not be amiss to place before your readers some information on this head. Copper mining may be said to have commenced in this colony in 1863, since which time it increased year by year till 1872, when, owing to some rich patches being struck, and notably a heavy dividend of cent. per cent. declared by the Peak Downs Company, wild speculation set in, and a mania for limited liability companies was raging. Nearly the whole of these ventures collapsed during 1873, causing copper mining to be looked upon as the most dangerous class of speculation going, far worse than gold; and as many, nearly all, of our enterprising men were let in more or less, it has since been tabooed by the speculating public, but the miner has been always a steady believer in the richness of our copper lodes, and I am glad to have to report his predictions as proving in the main correct.

To show the trade to what extent copper mining has expanded, I quote a few figures taken from the Queensland Statistics for 1872, to which I myself add for the information of the general reader the figures under the heading "value per ton of ore," and under the heading "value of refined copper per ton."

Year.	No. of mines at work.	Quantity of ore raised.	Estimated value of ore per ton.	Quantity of refined copper produced.	Estimated value of refined copper.	Average value per ton.
		Tons.	£ s. d.	Tons.	£.	£ s. d.
1864	2	2,512	2 16 6	89	7,120	80 0 0
1865	2	1,415	25 10 10	449	36,144	80 10 0
1866	2	2,835	19 3 6	604	54,360	90 0 0
1867	3	3,990	9 15 10	521	39,075	75 0 0
1868	3	6,571	14 2 0	1235	92,625	75 0 0
1869	4	8,268	13 8 4	1387	110,960	80 0 0
1870	4	8,936	11 12 0	1523	103,564	65 0 0
1871	6	14,503	12 4 0	2490	174,300	70 0 0
1872	36	19,361	10 0 0	2443	196,000	80 10 0

The returns for last year are not yet published, but even without them these figures are worth studying; they show that high prices have nothing whatever to do with increased supply—in fact, shows the reverse, as the lowest priced year, 1870, preceded the year showing the greatest increase in the quantity of ore raised, and the next lowest year in price, 1871, precedes the year of wildest speculation. It will also be seen that in the year 1872 30 new copper mines were opened up and in actual work, but that year shows very little increase in the quantity of ore raised, while the richness of the ore, as shown under the heading "estimated value of ore per ton," was actually less than the previous year, the value of pure copper being estimated at 10*l.* 10s. per ton more. To these 30 new mines actually opened in 1872 must be added some dozens of lodes discovered and partly prospected, some of which were pronounced duffers, some abandoned for want of funds, while many others were kept dark by the proprietors until better times. Since then new discoveries have been going on until now we have splendid specimens of ore from the Palmer. Through the whole extent of this colony copper is to be found from the Stanthorpe tin fields in the south, to the Palmer in the far north, 1200 to 1500 miles apart. The latest discoveries of importance are reported at Mount Orange and at the Star river; this latter very rich. Again, at the Dee river a very large and rich lode has been opened up, while the old mines at Mount Perry are again showing life, and the news from the great mine, the Peak Downs, is of a most cheering character; this latter mine has up to this date turned out at least three-fourths of the whole copper exported from the colony, and in value over 1,000,000*l.* sterling. The next, and as yet only, other copper mine worth mentioning for the production of metal is the Mount Perry Mine. Of the remainder of the 36 mines registered as being at work in 1872 about 20 have stopped for want of capital, and are abandoned; six have changed hands, and have made a fresh start; and the eight others are sticking to work, making very little show. Of the 36 mines at work in 1872 not more than six had furnaces erected, and two only have refineries. There is no doubt but that had we a cash capital of 20,000*l.* each to expend on these 30 mines in prospecting, opening up, and developing, Queensland would to-day be one of the first copper-producing countries in the world; as it is she is now out of her own natural resources steadily advancing to a first place in the production.

The exports of copper and copper ore for the past three years are as follows:—

Year.	Quantity of ore.	Value of ore.	Average value per ton.	Quantity of smelted copper.	Value of smelted copper.	Average value of smelted copper per ton.
	Tons.	£.	£ s. d.	Tons.	£.	£ s. d.
1871	474½	7,827	16 10 0	2555	174,701	68 8 0
1872	1043	23,183	22 4 6	2886¾	234,540	81 5 6
1873	361	8,060	22 6 6	2456¾	192,639	78 8 0

These figures show a falling off of one-fifth (20 per cent.) in 1873, which is much less than might be expected considering the total collapse in copper mining that year, and this year (1874) exports ought for the same reason show a still further falling off. During the latter part of 1873 the copper miners and prospectors were thrown entirely on their own resources, and as a consequence were very hard up. Just then the Palmer diggings were discovered, and numbers of them were at the first rush. They have as a rule been most successful, many of them returning south during the past two or three months, having made a good rise, and they almost invariably go back to the copper lode they left, having capital at their command to prospect, open up and secure the mine for themselves. In this way the Palmer has done much good.

There is no doubt whatever of the richness of some of the copper lodes in Queensland. Experienced captains are our first want, capital next. A mine partly opened up and prospected, of from 40 to 320 acres freehold, can be now bought cheap enough. The Trebor Mine, with tools, machinery, &c., and on which over 7000*l.* had been spent, was sold the other day for a little over 300*l.* The mine is a proved rich one, showing good prospects, but had not sufficient capital, got into debt and, like many others, wound up.

The past has proved to us that in a new country, like Queensland, no money should be spent except in prospecting for the first two years; no surface works whatever; sink and drive, prove the lode to be of value, and when proved thoroughly erect works of a character to suit the discoveries made. For want of experience we have heretofore always commenced our work at the wrong end. None of our copper companies had ever sufficient capital to even thoroughly test the mines, and most of the little capital they had, and in some instances all of it, was frittered away on the surface in erecting big houses for the manager and stores, houses for men, stables, &c., &c. Our little copper companies bubble, that commenced in the middle of 1871, reached its height in the latter end of 1872, and burst up in June, 1873, did much harm to a few who overspeculated, but I am certain it will yet do much good. The men—most of whom did not know a copper lode from a quartz reef when they started—have gained experience, and the rich lodes then reported upon and partly opened up still remain without any deterioration, waiting to yield their quota of the precious metal when called upon. The gold mines will do more for the development of the Queensland copper mines than was ever contemplated. The gold miner of Queensland has so far developed the gold mines of the colony single-handed and without any foreign assistance whatever, and the copper miner, getting his assistance from the gold fields, will in time do the same for the Queensland copper mines, but there is plenty of room and a good opening here for experienc and capital to further prosecute copper mining in Queensland successfully.

A most noticable fact connected with our copper exports is that the whole of the copper (ore and refined) goes to Sydney, none of it is shipped direct to London from here. This shows that all our producing mines are in the hands of the Sydney capitalists. This is no doubt the case with the Peak Downs and the Mount Perry Companies, as the offices and directors of both companies are in Sydney, while the production of all the other mines are so small that they naturally tend in the same direction. Another reason for this is that all the ore shipped goes to Newcastle to be smelted (we have not as yet a local smelting works). And, again, the freight of dead weight, such as copper ingots, from Brisbane to London has always been kept exceptionally high till within the past month—30s. to 40s. per ton has been the rate from here for years, while from Sydney 10s. to 20s. per ton has been the ruling price. This short-sighted policy of our shipping agents has driven freight to Sydney; until now, the ships having run short of dead weight, they have thought it desirable to at last lower their freight in a left-handed way from 10s. to 20s. per ton, but I am afraid the Sydney people have too hard a grip now on the shipment, and this reduction will not have the effect anticipated. Besides, shippers of tin and copper here are dissatisfied with the way the reduction has been made; some have been charged 40s. per ton, while others have been next day charged 15s. per the same ship. It all tends to throw the shipping more and more into the hands of the Sydney merchants, and until the shipping agents here fix the freight of dead weight at a low figure—say, 7s. 6d. to 10s. per ton to London in wool ships—matters will remain as they are.

The stride which copper mining has taken during the past 10 years I have already shown; the progress that we may fairly anticipate during the next 10 years will exceed that of the past. There is no want of material; our resources in the metal are boundless; all we want are the hands to work it, and cheap carriage to the port. The Government are now surveying railways to the Mount Perry and Kilkiven districts. The railway to the Peak Downs is progressing steadily; two years more will see the railway trucks into the yards of the Peak Downs Company. What a change that will be for the whole district. As an instance of the difficulties of carriage in a country like Queensland, there are 500 tons of ingot copper (pure) stacked at the Peak Downs yards at present, which cannot be forwarded for want of carriage. The refinery is increasing; the stock, 40 tons a week, is in excess of the quantity of copper carted away, and they have no prospect of getting it away for some time to come.

Brisbane, Nov. 9. ——— RESIDENT.

ROCK DRILLS.

SIR,—The owners or inventors of these drills not having replied to my proposal, as contained in the Journal of Jan. 2, I am led to the conclusion that they do not consider them applicable or beneficial in the working of a lead mine. I happen to know that a reply was eagerly looked for by several mining experts. D. E.

Jan. 21.

CHEMICAL METALLURGY—THE NASCENT PROCESS.

SIR,—In looking over the prospectus of the West of England Fire-Clay, Bitumen, and Chymical Company, in last week's *Mining Journal*, I observe a comparison is given showing the respective values of imported Spanish pyrites and the arsenical pyrites now being worked by this company, and if, as stated, a money value of 8*l.* 6s. 5d. per ton can be economically extracted from 1500 tons of pyrites per month (the quantity they intend to work), no doubt the large profits indicated will be made. Having some little knowledge of metallurgy, and being unable to see clearly how the metals with the sulphur contained in the arsenical pyrites caa be extracted and separated from each other to be made marketable in order to realise the amount of 8*l.* 6s. 5d. on every ton of ore worked, I shall feel much obliged if Messrs. Emmens, or any other gentleman connected with the company, will be good enough to answer the following very simple questions:—

1.—Is 3·82 per cent. of copper the regular average produce of the ore now being worked, and is it certain that the 100,000 tons of pyrites referred to as already discovered will be equally rich, and if so how much of this 3·82 per cent. of copper is likely to be produced in a marketable state from working on a large scale?

2.—Will 0·08 per cent. of tin (which equals rather over 1½ lb. per ton of ore), and valued at 1s. 6d. per ton of ore, pay for extracting, admitting that the whole of it is left insolubly in the spent ore?

3.—Is 30·66 per cent. of arsenic a fair average produce of all the ore now being worked, and is it expected that the 100,000 tons above referred to will be equally rich; and is the money value of 3*l.* 1s. 4d. per ton reckoned on the full produce of 30·66 per cent., or on what is actually produced from a ton of pyrites, as I presume from 5 to 15 per cent. of arsenic generally remains in the ore after being burnt or calcined?

4.—For what purpose is the 29·52 per cent. of iron, containing 17 per cent. of silica, used to be worth 9s. 10d. per ton?

5.—In what market or by what process can 18·10 per cent. of sulphur, mixed with 30·66 per cent. of arsenic, be made worth 10s. 6d. per ton?

6.—Is it intended to extract the copper, silver, and gold together, and if so will the silver and gold be removed from the copper liquors before the latter metal is precipitated; or are all the metals to be precipitated together and the silver and gold extracted from the copper precipitates, and by what process is the silver and gold to be either precipitated from the liquors or separated from the precipitate, and how much of the 5½ ozs. of silver and 1 dwt. of gold contained in a ton of pyrites is likely to be got out?

Birmingham, Jan. 20. ——— SMELTER.

A LEADEN "TWELFTH CAKE."

SIR,—I do not know, and can hardly expect, that you can find room in your crowded columns for a desultory and most unscientific letter from an utterly unknown and most feeble correspondent. But, Sir, I have a *mission* and an *object*, and am thereby emboldened to solicit your kind aid in ventilating them. In the first place, then (and, like our "senior member" here, it is always as well at starting to get back to "the Flood"), I am more than half a Welshman, that is (if I may offer the same plea as the illustrious Cobden did in the only joke he ever perpetrated in his long, grand, and glorious life) my "better half" is Welsh, and, consequently, I feel a sort of vicarious interest in the well-doing of the sons of the Cymry.

Not one word from my shambling Pegasus is needed to paint the beauties of this lovely land—even David Cox comparatively failed. Are not Llangollen, Bettws-y-Coed, Beddgelert, Llanberis, Festiniog, Barmouth, Tan-y-Bwlch, &c., "household words?" Is there a man or woman of taste in the three kingdoms—aye, or the three continents—who has not gathered at those shrines of beauty fresh inspiration for either pen or pencil? But stop! no crude efforts at transcendentalisms; no Emersonian rhapsodies; no Ruskinian word-painting are needed; my simple and most unromantic mission being to tell your readers how a leaden twelfth cake was cooked on Twelfth Day.

Serenely luxuriating in the sunny South, lolling with placid ease throughout the live-long day, supremely unconscious of the clank of engines, the whirr of wheels, the thickened atmosphere of these almost (to you) hyperborean regions, you cannot enter into the feelings of intense relief that fill these rugged northern bosoms at the merest excuse for a holiday. Whitsuntide, Easter, Christmas, New Year—aye, even dipping as far into the latter as Twelfth Day—we seize any and every opportunity, and make the excuse a *reason* for getting a wee bit on the loose.

Your scribe, and two companions deeply versed in warps and wefts, mules and jennys (especially Jennys), bitten, too, with the metallic tsetse, resolved to spend a day or two amongst the lead-ribbed hills of Montgomery and Merioneth. We determined to look at the two poles of lead mining adventure—a new and undeveloped fledgling, and a decidedly successful *venture*—and, by comparing the one with the other decide whether from similarity or dissimiliarity of stratification, &c., we could see—

"Aught that could make or break or shake a faith."

We visited the fledgling first, and found it at the GLAN CLWYD MINE, situated near Corwen; or, to be more exact, near Derwen, on the Denbigh, Ruthin, and Corwen Railway. An easy and most interesting walk of under two miles brought us to a very picturesque valley of the Clwyd, on the right or south bank of which, nestling near the top of a huge rift in the hills, you come upon a well arranged lead-mining plant. A fine water-wheel (40 ft. diameter, and 3 ft. breast), sieves, crushers, jiggers, &c.—the very picture of solidity and economy—a snug house for the agent rests on a little knoll within a stone's-throw of the dressing-floors, carpenters' and smiths' shops, powder magazine, storehouse, &c.; in fact, the whole thing as taut at every seam as the trimmest frigate in the fleet. By the extreme courtesy of the most courteous of captains we were at once invited to "come underground." This we willingly did, and Pluto never felt more excitement in pursuing Proserpine through the nether world than did we three novices (two, I beg pardon—one funked) in daring the darkling horrors of adit, stope, and level. The first part of the journey was pleasant enough, for we were seated, not exactly in a Pullman's palace, but in a dry wagon, with the *softest* bit of wood we could find on the bank for a seat. We were then pushed by a muscular son of Vulcan or Tubal Cain to a level being driven to the east of the main artery—pray excuse my muddle of technicalisms. The men had opened about 3 or 4 fms., and had most unquestionably got into lead (*clover* to them I presume); but to us were only apparent small detached bits of the precious metal, accompanied by sulphur, &c.—still the indications exhibited a change of formation, and, doubtless, it was a *lode*, as claimed by captain and men. Thence we moved still further southward some 30 or 40 fms., and were invited to inspect a stope in full operation. To reach this we had to ascend a not very inviting ladder, at least 4 ft. too short for its purpose. With teeth well set, and with feet hard pressed on to here a projection, or into there a cunningly hidden crevice, we managed to span the gulf, and then crept up a passage of about 2 ft. high to the chamber, or cavern, or stope, where a pocket of lead was being ruthlessly emptied. The sides shone brilliantly as our candles illuminated the hole (I should call it), and showed us lead, lead everywhere—a *bank of deposit* that would evidently more than pay its way. Tons upon tons of ore had been trammed from this fruitful bunch, and may be seen lying, in all stages, upon the bank, awaiting the crushers. As far as the uninitiated could judge there was treble the quantity needed to pay for getting it. We then retraced our somewhat perilous way, and worked up the great adit or cross-cut level, which is being driven to intersect another lode nearer the surface. Lucky men! lucky moment! Almost at the very instant of our arrival the Plutonians were finishing a drill, and in another moment the blast would have mangled what appeared to us to be a smooth, fine-grained, slate-looking rock, that stood across the level, and seemed, one could fancy, placed there to stay our, or anybody else's, further progress south. The extra light of our three added "dips" revealed to the quick and educated eyes of the watchful captain—

"Gold, or what seemed gold."

But, like Tennyson's (Sea Dreams), it was "visionary gold," that still required the subtle touch of the alchemist to turn it into "sovs." It was simply sulphur ("mundic" I think our leader dubbed it), clinging lovingly in aureate specks all along the forebreast wall. The captain almost tore the pick out of Pluto's hands, and struck with rapid strokes and forty-captain power into the western side. Instantly stuff began to fall of a looser formation, and as quickly did the excited chief pick up handful after handful, spreading them on his opened palm. The luminaries were all thrust around his digits, and brought to bear on the questionable-looking dirt, when "Here's more sulphur! Here's carbonate of lime! Here's! here's! here's—lead!! We've struck another lode!" What could we do then but seek our flasks, and toast our new-found friend? Had we christened it, too, I should have called it the "Jack Robinson" lode, so suddenly did it beam upon us. Of course, I had my misgivings, but then I always have, but not so these cunning delvers of the deep. Their deductions from the slightest signs seem as positive as "Old Leatherstocking's" (dear old brick!) were in hitting a Red Indian's trail. Well, every man to his trade. Then out, out, out—

"After labour came refreshment."

While we were burrowing in the bowels of the earth, the captainess, on hospitable thoughts intent, roasted a leg of mountain mutton (a four-year-old wether, I'd bet a groat), tender as a chicken, and with the true venison flavour that your Lincoln, Leicester, or Southdown can never know until they change their habitat to the sweeter air and sweeter grasses of the Cymric hills. With a voracity that the pale-faced denizens of your dingy metrop. can never hope to equal, we showed ourselves to be thorough trenchermen; were soon at peace with all mankind; toasted with delicious impartiality both Jew and Gentile, bond and free, and then with warm farewells and honest congratulations, wended our way to Corwen town, where, after a most exciting rubber, with two perfect syrens for partners, to bed—

"To sleep—perchance to dream."

Up like larks, bathed like otters, breakfasted like men, on south—

"To fresh fields and pastures new"

an extremely pleasant railway ride along the course of sacred Dee to Ruabon. We longed to go up to Wynnstay (splendid home of the grand old breed), to see Simpson and the 'osses, the hounds, the kennels, the hundred and one charms of the grand old seat, but time, or rather the want of it, forbade—so, willy-nilly, we had to reseat ourselves in a G. W. train, and on to Oswestry (spirited border-town, as it always has been since Oswald's day); then Welshpool, with Powys's proud towers standing high on Severn's side; then Newtown, factory and mart of the inimitable "reals;" then Llanidloes, last old

coaching station on Plynlimmon's northern side, but now illustrious as nearest neighbour to the prince of lead mines—the prolific, inexhaustible VAN. A pleasant and exhilirating walk of about two miles landed us at the dressing-floors of this successful venture. With sundry "vestiges of creation," in the shape of old sieves, old jiggers, &c. (kept, like Allsopp's old mash-tub, amidst acres of new ones), stands the plant of one of the most considerable lead mines of the world. There is not the almost sensational neatness and beauty in the mechanical contrivances here that you find at Laxey; but one thing strikes a business man—every foot of ground is economically occupied, every machine looks like work, looks like stability, and, what is best of all, looks like *dividend*.

The stratification of the two mines—the fledgling, Glan Clwyd, and the full-feathered eagle, Van—is, as far as uneducated eyes could see, identical. So was our leaden twelfth cake composed.

Manchester, Jan. 13. Your's, inextinguishably, ASBESTOS.

RAILWAYS AND TRAMWAYS.

SIR,—In consequence of my letter which you kindly published in the *Mining Journal* of Jan. 9 I have had some important enquiries upon the subject. One, for example, asks whether passengers themselves could not do something to induce the companies to adopt some system that would make their lines safe, the writer being specially interested in the safety of incline planes in some parts of Wales upon which he is accustomed to travel. Another wants to know whether the Board of Trade would not compel the companies to adopt some certain addition to their rolling stock that would save it from destruction. Now, they may rest perfectly satisfied that the Board of Trade will not do anything for them. I was simple enough to think that if I wrote to Capt. Tyler that he would at least look at the working models if I took them to his office. I thought that as there had just been a sad accident on the Welsh line he might, perhaps, be induced to advise the company to save their property. I did this because I see his name in connection with almost every enquiry where people have been killed or injured by railway accidents, and I thought that if he could prevent such a thing it would be better than enquiring into the cause afterwards. A very polite official letter was sent me in reply, but it was to the effect that all companies had a right to do as they liked with their goods and passengers, provided they did their best to secure safety, and that, therefore, I ought to apply to the companies themselves. It would be a difficult task to do any good in this way, and I am quite certain that while trains are run at such high speeds, even on level ground, there will be accidents in many ways, but it is equally certain that there never need be an accident on an incline however steep by the carriages or trucks running back if any of the couplings should give way, as the last truck would always prevent the others from moving. However, it is likely that many more lives will be lost, and some more rolling stock destroyed before such a plan is adopted, although only a few pounds outlay would be necessary.

James-street, Old-street, Jan. 18. J. WALKER.

UTILISING TIN REFUSE—BURNT LEAVINGS.

SIR,—I do not think it is generally known that within the last five years a very important improvement has taken place in the machinery used in the dressing of tin, more especially with reference to the pulverising of the tinstuff which has been dressed once, or the refuse of dressing, commonly known as "burnt leavings." Formerly this, though worth 1*l.* per ton or more for tin, was sold as copper ore for about 5*s.* to 10*s.* per ton, as the only method of grinding the fine dust smaller was by mining it with the tinstuff, and passing it again under the stamps. This process was very uncertain, and almost useless, but within a few years pulverisers have been invented. One of these (Dingey's patent) was long at work at Tincroft, and at present several of another kind (Stephens's patent) are working on the Red River. To these streamers it is especially valuable, for as they work only the fine refuse of other mines, much of which is an impalpable powder, very close grinders are necessary to reduce it still finer. The machines are all on the principle of a flour mill, a flat surface grinding on a flat surface, the machine being fed either from the centre or from the circumference. To counteract the expense arising from the continual wearing of the iron surfaces the bottom has been formed of cast-iron in segments, and the top muller of four cast-iron shoes, all of which can be renewed at a very small cost. The capabilities of these machines vary with the fineness required, some grind 7 tons, or even more, per diem, others only 1 ton. Still, the great superiority of this machine over the stamps for this class of work is universally acknowledged.

Another very important invention is the "dead frame," and this is to be seen now all down the stream works of the Red River, at Dolcoath, and at many other mines. The frame formerly in use was hung on a pivot, and was turned over, in order to wash down the tinstuff, but the "dead frame," as its name implies, never moves, launders placed at the head of the frame washing down the tin into "covers," placed at the tail of the frame to catch it. They also effect a great saving in levels, and were first erected with that object at Cook's Kitchen Mine. Recently their value has been enhanced by a self-acting apparatus of great simplicity, by which at intervals of two or three minutes the tin is washed down, thus obviating a deal of manual labour. Unfortunately for himself, the inventor of this frame did not secure a patent for his invention, which is, consequently, common property. I think this machine is equally adapted for gold dressing, and perhaps for the cleaning of lead ores which have been stamped.

Much has been written about the "Nascent Process," but has not the "Percussion Table" an equal claim on public notice? Nothing can be more regular than the work of a percussion table, aided by an efficient classifier. It separates tin, copper, lead, zinc, pyrites, and wolfram by a sure way, their specific gravity being the only guide, and this being natural is sure. L.

Jan. 20.

CORNISH MINING, AND "IMPROVEMENTS."

SIR,—The pathetic lamentation of Mr. W. J. Thompson, in last week's Journal, over his unfortunate connections in mining in the St. Columb and Roche districts, recalls vividly to my recollection a correspondence in the *Mining Journal* in which I took part about one year and eight months since, in which I repudiated the pretentions, and took exception to the proceedings of the "Save-all" tin dressing-floors inventor. Mr. Thompson himself was very angry with me for publicly expressing my dissent from the pretentions so boldly put forth by the person against whom he now so bitterly complains. He addressed a letter to you demanding the disclosure of my name, that they might know who it was that dared to dispute so distinguished an authority. I felt at the time that the statements which were made concerning proceedings at those mines was an impertinence, and an insult to public common sense. I questioned the value of the lode at Wheal Mary, as represented from time to time, and absolutely controverted a letter in respect of the Great Royalton Mine, wherein the writer stated he had made 100*l.* per month profit from that mine from stuff not exceeding 4½ lbs. of tin to the ton. But the incomparable genius which devised the "Save-all" arrangement affirmed, without, however, adducing any facts to support his position, that he had done it, and could do it again.

That such an announcement should be made by a man claiming to have had 30 years practical experience in mining was indeed remarkable, and that he should have found backers to endorse the assertion was no less so. Even the late Mr. Ennor gave countenance to them by espousing that side in the controversy, and affirming in a report of his, published at about the same time, on the St. Blazey Consols, that he was told when making his inspection of that mine that another mine close by was making a profit from ores yielding only 2 lbs. of tin to the ton, thus tacitly endorsing that statement. Now, if we take tin at 90*l.* per ton, which is a figure much too high for calculating pecuniary results, we shall find that 4½ lbs. of tin to the ton of stuff would be worth 3*s.* 7¼*d.* per ton *in situ*, whilst at 2 lbs. per ton it would be only worth 1*s.* 7*d.* per ton *in situ*. Statements like those one would think should never beguile even the most unwary, as a moment's reflection would suffice to convince the most inexperienced person that mines represented by such values were utterly unworthy of notice. And when adjectives, such as rich, fine, splendid, &c., are resorted to to denote values instead of plain figures, which would express the estimated amount definitely, it is difficult to distinguish between that and veritable clap-trap. A reference to the pages of the *Mining Journal* during the first six months of 1873 would sufficiently indicate the proceedings to which I refer, and the strong ground taken by many persons to bolster up as of unequalled value a set of mines in the St. Columb and Roche districts. It is a matter of no consideration for the public as to whether it has been deceived through ignorance or design, as the consequences to it are in either case the same.

I cannot help thinking that if Mr. Thompson had looked critically into the business, as a secretary visiting the mines with which he was connected should do, and is expected to do, he could not have been so grossly deceived as he now alleges to be the case, as there is unquestionably a very marked difference between counterfeits and the things they are intended to simulate. Of what use are secretorial visits to mines if everything is to be taken *viva voce* from the agents? Just as well stay in London, save the money, and avoid the perpetration of so patent a sham. Mr. Thompson's error consisted, in my opinion, in gratuitously endorsing the statements of others, whereas if he had only held them responsible for statements made concerning the mines he would not in all probability have been so mercilessly visited with the reproach he now complains of, as no ground could then have existed for such a course. The most common prudence would dictate that the responsibility of one's own office is quite enough to incur without voluntarily undertaking that of others. He may probably now discover by experience that a blind confidence is a dangerous constituent in any one's composition. MINE AGENT.

SUCCESSFUL AND UNSUCCESSFUL MINING—MACHINERY.

SIR,—The seventh and eighth decade of the 19th century has made unparalleled advances in the science of applied mechanics; articles once valueless are now valuable; substances once worthless are now precious; commodities once profitless are now profitable; things once useless are now useful; and these results are mainly owing to the rapid strides which machinery has taken. Yet it cannot be denied that some of our young mines, by adopting new inventions, have suffered considerably. Several kinds of stamps have been erected in different places, but without establishing a general superiority, and some of the mines have subsequently erected the abused, though extensively used, head and lifter stamps. I could refer to a mine where everything that was wanted in the way of machinery must be of a novel and untried character, so much so that the phrase "A new destruction from London" was of frequent occurrence amongst the parties employed at the mine; and, sure enough, they were. The surface agent has often wished the complicated stamps to limbo, and the intricate buddles he hoped the "old gentleman" would take. Even an air-machine must be fetched from London, whereas a more efficient and durable (though not as beautiful) one could be built on the mine for at least one-eighth of the cost. Artizans have spent much labour and thought in bringing the patent pulverisers to perfection; and are they not complex affairs at best? The most effective, according to the writer's opinion, is one which consists of two large stones propelled backwards and forwards over an iron surface by means of two iron bars attached to a water-wheel. I thank Capt. S. Clarke for the information about a new patent useless 200*l.* buddle. I know of several erected at about the same cost, and are now worse than worthless, as, "like the dog in the manger," they prevent the construction of effectual machinery. I can point to only one mine at present where these buddles are working to advantage, and there the head and greater part of the tail find their way into the same receptacle.

The class of machines wanted for our mines is not that of a complicated and intricate character, "which leads to bewilder, and dazzles to blind," where if a nut or pin moves or shifts the inventor and foundry must be informed of the fact in order to repair the breach, as has been evidenced in some of our improved stamps, buddles, pulverisers, jigging-sieves, &c.; but our machines must be stripped of unnecessary belts and superfluous cog-wheels, of everything pertaining to a perplexing nature; must be strong and simple, so that should an accident occur it may be remedied at once on the mine. EDWARD SKEWIS.

P.S.—Whilst kindly thanking "Cornishman" for his improved revision and addition of "The Hindrances," allow me to tell him that the paragraph on which he enlarges is not so paradoxical as represented, the first "cause" being between quotation marks. E. S.

Jan. 19.

SUCCESSFUL AND UNSUCCESSFUL MINING.

SIR,—In last week's Journal Mr. Skewis has again submitted his opinions on the above subject to public scrutiny and criticism. Taking the most flagrant examples of mismanagement, he has offered them as a guide by which Cornish mining is to be judged, and his examples seem to have been selected more with a view to effect than to the general enlightenment of the public at large. In his third reason I agree with him that doubtless many tin-dressing floors are so situated as to necessitate the use of mechanical force in the transportation of stuff, when, had the situation been different, a natural agency might be employed. His description of the tin-dressing floors is ridiculous, and his simile far-fetched and inappropriate. In contrasting the difference between the expenditure on mine dressing floors and streamer dressing floors he appears to forget that in mines the stuff has to be stamped, and that buddling is necessary in order to catch the rough tin, none of which is necessary in a stream works, and hence the difference on the outlay. With reference to agencies, I believe with him that in many mines there are too many overlookers, and am confident that were the time often occupied in parleying with the men, sauntering about doing nothing in particular, reading newspapers or other unimportant matter, and eating and drinking, spent in doing effective duty, and looking after the workers, more work would be done, and done better, than under the old *regime*. As to horse labour, I may state for Mr. Skewis's information that the usual hire in Cornwall at present for a man, with an efficient horse and cart, is about 5*s.* to 5*s.* 6*d.* per day; that these men work as labourers, filling their own carts, and that these horses usually take 1 ton as a standard lode, some more, a few less. Further, that in all well-regulated mines the carting, or as much of it as possible, is set or let by public tender, and that, consequently, the pay is in proportion to the work done.

It appears, indeed, from the whole tenor of the letter to which I refer, that the author has sought to give us the most extreme cases coming under his notice, ingeniously separating it from all extenuating or moderating circumstances, and in no part of his letter is this more evident than in the sixth paragraph. Account-house expenses were in times past, and still are in many cases, too considerable by far, but the idea of agents or captains keeping a "pack of hounds" is ridiculous, preposterous, and, more than this, untrue. Need I attempt to refute such flagrant misrepresentations? Spirits are kept in Cornish account-houses, and large quantities are drunk, but here his examples are strained, and are the most notable exceptions to the rule. In account-house "perquisites" we find the curse of Cornish mining. No language is too strong to condemn the practice of allowing spirits *ad libitum* and dinners; it causes that lack of energy—laziness—among many agents, and is subversive to all discipline and order, and here, at least, the fault lies with the mine-owners—the shareholders. The excuse is that agents coming up wet and tired after lengthy perambulations underground require something to compensate for the exhaustion of the system. Granted; then let the shareholders give 1*l.* a month more, and let the agents provide themselves with meat, drink, clothes, and candles. Let all account-house expenses be done away with, and account-houses be regulated like ordinary offices, and this will result not only in the benefit of the employers, but in the double-fold advantage of the agent, who will spend the time formerly occupied in "swilling" in looking after the interests of the adventurers. I know that where this has been tried, where there were no account-day or pay-day dinners, where no spirit was allowed, no barrel of beer, no account-house woman, that double duty has been done, and increased energy and activity been the result. Anyone who has any acquaintance with life "behind the scenes" in Cornish mines could quote quite as wonderful and quaint examples of the pernicious influence of "perquisites," but to whose profit would it be? Had Mr. Skewis taken ordinary examples of the present state of affairs (for who deals with the past?) he would, perhaps, have enlightened many, and would have been able, if his testimony were gainsaid, to appeal to truths, and support himself by an overwhelming array of facts. Finally, lest anyone should imagine the contrary, I am not a teetotaller, and I am not connected with any mines in Cornwall, but I am

Jan. 21. A CORNISHMAN.

SUCCESSFUL AND UNSUCCESSFUL MINING.

SIR,—Having read the letter of Mr. Edward Skewis on this subject, who purposes, under six different heads, to fully elucidate the avoidable evils of mining, and noticing some remarks in your last issue from the pen of a "Cornishman," where he gives as his opinion that the principal hindrances to successful mining are—1. Too low-class ores put to stamps.—2. Agents not energetic enough underground.—3. Mines being worked without the slightest hope of success. Where is the failure? Who is to blame? The shareholders, the workpeople? No! Talk about "Non-development, waste of money at surface;" "Too low-class ores being put to stamps," &c. What is the cause of it all? Unqualified agents, men who know no more about the management of a mine than a child. I was rather surprised some time since, while conversing with the agent of a mine, to find him ignorant of the chemical composition of blende, and when I told him that zinc was the principal constituent it almost made his hair stand on end. Every metallic substance raised in our mines is at the present moment saleable; therefore every agent should have at least a slight knowledge of chemistry and mineralogy. He should be a pushing, energetic fellow, and at the same time agreeable and sociable with the workpeople, for many valuable hints are to be gathered from them. I once heard of a man-of-war ship making for the Lizard, when one of the sailors told the captain that unless he altered his course he would strike the rocks. For this offence the poor fellow was put in irons. The ship struck, and all perished save the man in irons. So it is with many of our agents to-day. If John or William suggest an idea to his serene highness, Capt. W., he is spaled or immediately discharged.

Agencies should be put up to public competition, so that the 8*l.* 8*s.* often paid to a mere upstart, who is no more good in his place than an Egyptian mummy, should be invested in a thorough practical man, who knows the market value of all the minerals, and how to dispose of them to the best advantage for the mine. It would also induce young men to give their minds to study when they saw that there was a chance of being promoted. The army purchase has been abolished, whereby we hope to see the right men in their right places; and soon may that abominable evil to successful mining, unqualified agents, be a thing of the past. T. HY. ALLEN.

Beacon, Camborne, Jan. 18.

TOLBENNY IRON MINE, ST. STEPHEN'S, CORNWALL.

SIR,—In the Supplement to the *Mining Journal* of Jan. 16 I notice a letter, under the above heading, signed "Old Miner." The writer need not have been afraid to sign his proper name to the letter, because the good or bad words of those whom it concerns would neither be beneficial or detrimental to him. As the late manager of Tolbenny Mine, I might just say that the mine, without any machinery on it, was purchased from Mr. Williams, of St. Stephen's, in the beginning of 1874, for 1100*l.*, and then the purchaser had to pay 50*l.* more for the leases. After spending a considerable sum of money in the development of the property, and a little in machinery, &c., I sold the whole concern as it stood to this same Mr. Williams for 272*l.*

"Old Miner" suggests that "full details of the working cost, with every particular as to the nature and value of the lode, and ore raised, be supplied for the satisfaction of all parties." Such a report can be supplied by me, but certainly not gratuitously.

Tavistock, Jan. 20. C. W. SECCOMBE.

RED AND BROWN HEMATITE IRON, IPPLEDEN, SOUTH DEVON.

SIR,—For a long time past shode stones of iron giving 74 per cent. have been found over a large area of land in the above-named neighbourhood, causing Capt. J. Rodda and myself to apply to one of the large landowners—Mr. T. Whidbore, of Teignmouth—to be allowed to effectually costean his land. This we have done, and discovered a large iron lode, giving the full percentage of the 1,412,255 tons of Northamptonshire iron, and the percentage of the Clevedon iron raised in 1873, copied from the statistics in the *Mining Journal* of Dec. 5 and Dec. 19, by Mr. R. Meade, Assistant Keeper of Mining Records. The above property, by one owner, consists of 370 acres, where high percentage iron has been found by ploughing the land. There are two other properties held by the above, where the lode passing through have produced shode stones of 74 per cent., in lumps of 14 lbs. The situation, stratification, and the advantage of being near a siding of the South Devon Railway, which joins the tramway at the Dartmouth high tide at Totnes, where the coal vessels may be glad to take in iron for ballast. In each of the above setts there is a marble quarry, and near the celebrated marble quarry of Messrs. Field and Co., of London, and similar marble to a portion used by Baron Grant in Leicester-square. If some enterprising person or persons will join us in working the land, with all and other advantages above mentioned, where we can get cheap labour, it will prove a new rich field of mining enterprise. One of the estates can be purchased—about 50 acres—where cottages can be built for the workmen. Houses are built for owners or agents. The cottages would be self-paying by the tenants paying monthly, adding a little garden to each, where some of the finest crops can be grown, as good as any in South Devon. GEORGE SPARKE.

Ashburton, Jan. 21.

SUCCESSFUL MINING NEAR HOLYWELL.

SIR,—The directors of the South Prince Patrick Lead Mine have just declared another dividend of 10 per cent. for the quarter, which is at the rate of 40 per cent. per annum. The fortunate shareholders have reason to be highly satisfied with the foresight and attention of the directors in the management of the affairs of the company, and it must be also very pleasing to the directors themselves in having brought the mine to such a promising state, especially as from further discoveries which have recently been made it is hoped the dividends may after a time reach a higher figure. Another mine, the SAINT DAVID'S (Limited), in 10,000 shares of 1*l.* each, also near Holywell, and managed at the same office in Birmingham, looks likely to be a great success. The company was registered about three months ago; it is opening out well, and the results can hardly fail to be satisfactory, inasmuch as even at this early stage, and while dead work is being done, more than sufficient ore is being raised and sold to pay the working costs for all parts of the mine. There are at present three shafts being opened, from one of which ore is being now raised: another is on a previously unworked vein; and the third is already sunk into one of the richest veins in the district, and it is expected soon to be in lead, when no doubt these shares will go up as rapidly as the South Prince Patrick shares, which are now selling at from 100 to 200 per cent. premium, a mine exactly adjoining which has been worked largely, and paid the shareholders over 1,000,000*l.* sterling in profits. Another mine, adjoining south, paid about 200,000*l.* in one year. The district is extraordinarily rich in lead ore. The Talargoch Mine, which has been working more than 400 years, and still going, is on the same range. Investors may easily satisfy themselves of the above facts, as the mines are within walking distance of the Chester and Holyhead Railway. It is astonishing that there are so many persons who are attracted by diamond schemers, and will put money enough into these projects, but look shyly on genuine home mines, which are within a few hours of their own doors, and the *bona fides* of which can be so readily ascertained.

NORTH WALES.

WHEAL MARY TIN MINE—ST. DENNIS.

SIR,—I observe in last week's Journal a letter from Mr. Thompson, in which I am referred to, and a report of mine is set out. I, therefore, beg you to insert this my reply. In the first place, at the time I wrote the report Mr. Thompson was publishing a paper of his own, called the *Investors' Monitor*, and he particularly requested me to send him weekly reports of all the mines I was connected with. I am not a literary man, but Mr. Thompson told me that he was, and there was an understanding between us that he should put my reports in proper form if they were not grammatical, which is my explanation of the request that he should alter the report "to make it read better." You will also, no doubt, remember my writing to you about the same time respecting some reports which appeared in the Journal *not* written by me, and requesting you not to publish any reports unless authenticated with my name. Now, with regard to the mines, I retract nothing said in my reports concerning them; they are as good as I represented, and in proper hands might have been profitably worked. If only half or quarter of the money Mr. Thompson got from the shareholders had been laid out on the mines, so many of what he calls his "clients" would not have had cause to repine over the severe losses he speaks of. I do not know anything about Messrs. Clymas' debt, except that they supplied a lot of things to Wheal Mary Mine, both before and after the company was registered, but latterly no supplies could be had from any merchant unless guaranteed by myself or some other respectable person. The leading partner in Williams's Perran Company gave orders to their manager in my presence not to send any materials to any of the mines with which your would-be-much-injured correspondent was connected unless I or some other party approved of would be answerable for payment. Your readers who take any interest in these matters

will, however, soon have an opportunity of hearing both sides of the question, as I find that Mr. Dawson, who paid Mr. Thompson over 500*l.* for shares in St. Dennis Consols, is in London consulting his solicitor for the purpose of taking proceedings, and I will cordially give him all the assistance in my power. Mr. Thompson had a tack-note for six months, with power, on producing a satisfactory company, to take up a sett on payment of 500*l.* to the lord. He managed to sell to Mr. Dawson, Mr. Pinney, Mr. Marsh, Mr. Muirhead, and several others, as I have been informed, shares to over 2000*l.*, but he did not pay the lord's premium, and could not get the sett in consequence; and inasmuch as the actual expenditure on the mine was only 225*l.* 15s. 9d., your readers will be able to attach its proper value to Mr. Thompson's statement that he lost any money of his own through "these unfortunate mine ventures in the neighbourhood of St. Columb."

If you take the trouble to refer to my reports on Wheal Mary, and other mines, you will find my opinions fully borne out by Capts. Tregay, Pope, Hancock, Williams, and others.—*Roche, Jan.* 21. THOS. PARKYN.

WEST SETON AND OTHER MINES.

SIR,—With Cornish mining prospects more favourable than for a long time past, I would make a few remarks on a district which has suffered quite as much or more than any other during the recent depression—I mean the West Seton or Camborne northern district. About three years ago a pedestrian going through this run of mines could not help being struck by their busy, active, and cheerful appearance, and by the many signs of vigorous active life everywhere around him. A pedestrian now would be equally struck by the desolate appearance this same district exhibits, by the air of gloom and sadness around, inspired by the sights of empty engine-houses, dismantled floors, &c., the general signs of poverty, desolation, and death.

About three years ago New Seton employed alone 30 persons, North Roskear about 250, Wheal Seton over 500, East Seton about 30, and North Crofty employed about 200. All these are now idle and dead. West Seton, too, formerly employed about 600 hands, while it only requires now less than half that number. In these few mines alone 1500 persons are employed less than formerly. The history of West Wheal Seton of late is somewhat singular. Everything went well with it until the dividend dwindled down to 20s., and then altogether ceased. From that time to the present its days have been full of trouble. Mr. B. Matthews, for many years its purser, died not long since; Mr. O. Matthews, his son, succeeded him, but he also fell sick, and, therefore, became unable to manage as his father had done. The management consequently fell on the agents. Just then Capt. Wm. Teague, of Tincroft, already manager of Wheal Seton, bought a large interest, attended one or two meetings, and with that farsightedness which distinguishes him, saw that the mine was in a critical position, and doubted, not the honesty, but the ability of the staff to bring it safely through. He, therefore, proposed an entire change of executive. A small majority believed with him, but on its being represented by the minority that it would be unjust to dismiss the agents, on account of their previous services, and on his seeing that his majority was rather too small for his purpose, he withdrew his proposition, got rid of his shares, and West Seton knew him no more. Soon after this episode of Capt. Teague the price of tin declined, and Wheal Seton and North Roskear both stopped. Immediately fear seized hold on the minds of West Seton staff. Meetings were called, and a *pro tem.* committee was formed to take steps to guard against the great influx of water from Wheal Seton and North Roskear, of which the governing body of West Seton were sore afraid. Nothing was effected by all this, and things went on as before. The staff was just beginning to settle comfortably down, when their peace was once more broken by the attacks of Mr. W. H. Rule, a would-be amateur mine manager, who brought sundry and various charges against the working of the several departments. Mr. O. Matthews died, and Mr. T. Pryor, after a time, was elected as purser in his stead. By-and-bye Capt. Pascoe resigned, and the troubles of West Seton staff culminated at the meeting, when Capt. Josiah Thomas, of Dolcoath was appointed manager, with Capt. Josiah Thomas, his cousin, late of Mexico, second in command. But they were called in too late, and in spite of their many great efforts, the water is at this present time up to the 110, and all the principal workings under water.

New Seton is stopped; it never paid a dividend, but made endless calls, and at its winding up they discovered that the engine, &c., was erected in the wrong place. The greatest part of North Roskear was working at a loss when it stopped, but the Crofty part was said to be paying its cost. It, although poor lately, was once a very rich mine indeed. East Seton was a very promising young mine, not losing much, but it would be folly to try to re-work with all the water against it. North Crofty was losing as it was being worked. It is now in the hands of the Stannary Court, so there is little hope of it ever doing anything. Wheal Seton stopped without making a call.

Thus this once important district, formerly giving employment to over 1500 persons, is virtually in a state of coma, and, with the exception of those few at West Seton, all that large number of persons have had to seek employment elsewhere. But I state it without hesitation that, if Capt. Teague had a strong majority at that unfortunate meeting at West Seton, Wheal Seton, North Crofty, and a part, if not all, of North Roskear as one great mine, and mining authorities are unanimous in the opinion that as one great mine they would pay more than costs, if managed by Capt. Teague. Capt. Teague stands alone in being the only manager in the county whose mines did not make a call in the recent depression. Of all his mines not one made a single call on any adventurer during the whole of the late depression. Most of them have paid dividends. He is now working Great Work, in Breage, himself, and if he could be induced to work the mines in the Camborne northern district as one great mine, under one great company, he would be of greater service to the county than any one man now alive, and whosoever succeeded in inducing him to adopt this course would confer greater benefit on the community than if he gave 500*l.* to the poor. This is the opinion of— A SILENT ADVENTURER.

ROMAN GRAVELS.

SIR,—The great rise in Tankerville Mine, from 6*l.* 15s. or 7*l.* within the last few weeks, to 9*l.* 15s. or 10*l.* 5s., might not unreasonably call attention to Roman Gravels, its richer neighbour, now paying quarterly dividends of 8s. 6d. per share. I notice in March last that Capt. A. Waters stated that the reserves were 30,000 tons of ore, independent of discoveries, or a value estimated in cash of 510,000*l.*, the price then being 22*l.* or 23*l.* per share.

Might I ask if Capt. Waters, whose reports have ever been most truthful in regard to these two named Shropshire mines, still considers the Roman Gravels Mine to be of the same approximate value? If so, with a better price for lead now ruling, may I ask what can reasonably account for the cheapness of the mine at 13*l.*? Surely these reserves must now be worth more than 500,000*l.*? We have also a very valuable plant and machinery in addition, erected at an enormous cost.

In the last setting report we find the following valuations, without reference to levels to be thus valued (stopes) per fathom:—62*l.*, 62*l.*, 40*l.*, 46*l.*, 54*l.*, 62*l.*, 78*l.*, 45*l.*, 31*l.*, 45*l.*, 62*l.*, 40*l.*, 54*l.*, 62*l.*, 23*l.*, 46*l.*, 53*l.*, 31*l.*, 20*l.*, 35*l.*, 30*l.*, 30*l.*, 100*l.*, 100*l.*, 38*l.*, 62*l.*, 46*l.*, 40*l.*, 46*l.* Of course I cannot enter into values of ores which may be discovered when Corfield's new engine-shaft drops upon the lead. but I should be obliged to any of your correspondents to point out a more splendid investment at the price of 13*l.*, but 3*l.* higher than Tankerville Mine, which has not paid a dividend for two years. Not that I depreciate that property on any grounds, but I firmly maintain Tankerville shares being worth 10*l.*, Roman Gravels are too cheap at 13*l.*, just 10*l.* less than last March! I see no falling-off in the stopes when massed together, as by figures shown, and the letters of your correspondent "Medicus" in favour of Roman Gravels at once arrested my favourable attention.

London, Jan. 20. INVESTOR.

WHEAL AGAR, AND ITS MANAGEMENT.

SIR,—Will you please allow me to enquire, as a shareholder, what occasions the perpetual delays in the progress of this mine? We have been for years assured that when certain dead work was accomplished the paying lodes would be immediately wrought upon, and profitable returns made. We were given to understand that the engine was set to work long ago, and yet all we hear of the mine is that more money is needed to bring it into a paying state. Can any of your correspondents inform me and my fellow-shareholders of the real condition of the mine, and whether or no it is being fairly worked? For it is, to say the least, strange that so large a sum as has been already subscribed (60,000*l.*) should be insufficient for the full development of the property. SHAREHOLDER.

[For remainder of Original Correspondence, see to-day's Journal.]

THE TIN STANDARDS.—The standards were advanced on Monday, the 4th inst., 3s. per cwt., since which no further change has taken place. The standards are at present—superior common, 93s.; superior fine, 95s. The present depressed state of American trade will hinder any great advance in the standards, but, somehow, there is an enormous consumption, and we expect there will be a much less supply from Cornwall, by means of the floods. The tin smelters met on Monday, but any change in the standards for tin ore was deemed undesirable.

THE IRON MINES AT DUCHY PERU, GRAVEL HILL, &c.—It affords us much pleasure to learn that Mr. Parkyn, the present manager of this extensive run of iron mines (who has had as great experience as any man in the management of extensive iron mines in Yorkshire and Lancashire), unhesitatingly states his conviction that ere long the output will not only be equal to but far exceed the estimate formed by Mr. W. R. Roebuck—of 1000 tons of iron ore per day. We have been instituting enquiries as to this very important development of iron ore mining in Cornwall, and shall revert to the subject on an early day.

West Chiverton Mine sold, on the 7th inst. (four weeks), silver-lead ores as follows:—No. 1, computed 70 tons. at 19*l.* 1s. 6d.; No. 2, computed 60 tons, at 8*l.* 15s. The sale weighs off over 1800*l.*

CORNISH MINE SHARE MARKET.—During the past week the Share Market has continued steady and prices remain unaltered, there being no fluctuations of importance to notice. The tin market keeps quiet, and it is generally believed it will remain so until the Banca sale, when an improvement is expected. In the meanwhile investors are taking advantage of the lull and buying, hoping ere long to reap a substantial harvest from so doing. The water is still troubling most mines, but has not yet made much difference on any marketable share. The following are the closing prices:—Botallack, 47½ to 52½. Carn Breas moderately dealt in at 60 to 62½. In Cook's Kitchens a good business has been done, which close 9 to 9¼. Dolcoaths have received a fair amount of attention, and a good many shares have changed hands at 50 to 52. Ding-Dong called 6 to 7. In East Pools a fair amount of business has been done at 13 to 13¼. East Lovells a little dealt in at 7½ to 8½. Providence, 4 to 5. South Condurrow fairly dealt in at 5 to 5¼. South Croftys nothing doing, called 13 to 14. South Carn Breas moderately dealt in at 1¾ to 1½; call paid. Rosewall Hills, ¼ to ¾. Trumpet Consols, ⅞ to 1⅛. Tincrofts keep steady at 30 to 31, and a fair business has been done in them. West Bassets not quite so good at 8 to 8¼. West Seton, 9 to 11; the side lift went to work on Wednesday. West Frances fairly dealt in at 10 to 10½, at which they close. West Tolgus largely dealt in at 65 to 67. Kitty (St. Agnes), 5½ to 6. Unys, 3¾ to 3⅞. Wheal Jane steady, 5 to 5¼. Wheal Peevors have advanced to 5 to 5¼. South Croftys, after reaching 17, have declined to 15, sellers; but we are glad to hear that they have an improvement in the bottom of the mine. South Carn Breas receded to 26s.; call paid. At St. Just Amalgamated they have had to contend with an influx of water, and at times there have been as much as 15 fms. of water at the bottom; but they are now rapidly draining the mine. Tincroft, 29½ to 30; the mine has improved in the bottom, and as the new stamps is in full course of working, it is hoped that a good profit may be shown at the next meeting. At Treleigh Wood the water is above the 24, and all bargains idle. Wheal Basset shares have heavily dropped, and are offered at about 10 to 12; the water is still rising; it is said they have 65 fms. of water in. Wheal Kitty (St. Agnes), 5 to 5¼; three ends are worth 45*l.* per fathom, and a winze 9*l.* Wheal Uny quiet, at 4; six ends are valued at 87*l.* per fathom, a winze 6*l.*, and two rises 22*l.* At Old Tincroft Consols the adit has been repaired, and the men will be working in their places shortly. We are sorry to hear it stated that there are nearly 100 fms. of water in the Pedn-an-drea Mines. There are 40 fms. of water at Perseverance, and fears are entertained that it will run into Wheal Uny. St. Ives Consols called 30s.; last call paid.—*West Briton.*

Meetings of Public Companies.

NORTH PRINCE PATRICK LEAD MINING COMPANY.

The first general meeting of shareholders was held at the offices of the company, New Broad-street, on Tuesday,

Mr. EDWARD HILTON in the chair.

Mr. G. H. CARDOZO (the secretary) read the notice convening the meeting.

The CHAIRMAN congratulated the shareholders on the prospects of the mine; and, considering the short time the company had been established, he felt convinced that after they had heard the report read from the manager, which he should call upon the secretary to do presently, they would agree with him that the progress made was of a highly satisfactory character. To most of the shareholders it would be unnecessary to dwell upon the favourable position of the mine, surrounded as it is by properties that are paying good dividends to the fortunate shareholders.

The SECRETARY then read the agent's report, as follows:—

Holywell, Jan. 16.—It affords me an amount of pleasure to acquaint you with the present position also the future prospects of your mine at this, your first, general meeting. Although I am not able at present to inform you of any great discovery, yet I consider the prospects of the mine greatly improved since the commencement of operations by the present company. We commenced on Oct. 19 last with four men, to whom four others have not been added. During this time we have driven about 15 yards along the Silver Rake vein westward through very obstinate ground, which yet improved gradually for the last 10 yards, being easier to drive, and also showing stronger indications of being near a cross-course, or north and south vein, the ground getting more mineralised every foot we drove, the spar and clay also being of such a nature that we may reasonably expect a good deposit of lead ore shortly. There are also a few nice spots of lead intermixed, but not as yet of any value to mention in this report. In addition to this, we have set a partition at the bottom of the shaft for about 34 yards, and re-set the ladders. The gin also has been thoroughly repaired. I have also put two men in the 50 yard level to make a trial in the "flat" there, but I cannot say there is much lead as yet, although we have had a few nice lumps about the size of an egg, but I shall be greatly disappointed if it does not prove a good thing in a short time. It is my intention in the course of next week, according to your instructions, to close for the purchase of au engine to put on the western shaft, after which I have not the least doubt but that the mine will prove a most successful undertaking.—JOHN JONES.

The following resolutions were carried unanimously:—"That the directors be and are hereby, re-elected, and that the remuneration of the directors, commencing from the date of registration of the company, be 200*l.* per annum, and that the same be increased to 300*l.* per annum on the company paying 10 per cent. per annum on the paid up capital. That Mr. F. F. Buffen, of 12, Moorgate street, be, and is hereby, appointed the auditor of the company, and that his remuneration be fixed at a future meeting. That a registration fee of 1s. shall be paid on every transfer of shares in this company. That a copy of these resolutions, with the agent's report, be sent to the shareholders."

A general discussion then took place.—Mr. GORDON, the managing director, stated that he had lately visited the mines and duly inspected the property, and was about shortly to visit them again. He would assure the proprietors that no exertion on his part should be wanting to attain success. He was glad to inform the shareholders that the statements put forth in the prospectus were fully in accordance with the information he had gathered from the local authorities, as well as from others who were conversant with this mining district—the Halkyn Mountain.

Mr. MOORE thoroughly coincided with the remarks of the last speaker as regarded the future of the mines. He had great experience of the district, and had visited the mine on many occasions to satisfy himself as to its merits. He had no doubt but that when the engine (which he was glad to hear from the board had been purchased) was in working order, and the mine drained, a large quantity of lead would be immediately available to assist in the future development of the property, as it was well known that a good course of lead was standing in the bottom of the western shaft. He was of opinion that in a short time the company would be enabled to pay dividends, and the directors would most certainly get the increase of remuneration set forth in the resolution. In conclusion, he could only add that, as a proof of his confidence in the mine, he had subscribed for a large number of the shares, which he was satisfied would amply repay him.

Mr. JOHN WALKER was glad to hear that the directors had purchased the engine, and also the remarks of the Chairman as to the decision of the board to push on the works at the mine as rapidly as possible, and felt satisfied that the results would be highly favourable.

Mr. JOHN MOSS said he had, in company with several gentlemen of mining experience, lately visited the mine, and the unanimous opinion expressed by them was extremely favourable. For his own part he had no hesitation whatever in affirming that he had never know a company started under more advantageous auspices. The board of direction were men of business, and the manager a thoroughly practical and experience mining captain, who had recently brought the adjoining mine—the South Prince Patrick Mine—to a dividend paying position. The sett contains many points of value, any one of which would in itself be sufficient to make a splendid success of the property. The chief of these points was the intersection of the Pwlly-gaseg and Silver Rake veins, which must be shortly accomplished, as the indications in the driving point conclusively to the speedy junction of the lodes. The next feature of importance was the flat, which the agent hopes shortly to open up. It was well known that where these exist in this district they invariably prove highly productive. Another point was the great north and south vein, running through South Prince Patrick and Prince Patrick into this sett, which he presumed all present knew was now producing such large returns. It should not be overlooked that this mine can be developed in a most economical manner owing to the natural drainage of the water by a swallow, which drains this and the adjoining mines.

Mr. MOORE, replying to Mr. JOHN WALKER, stated that within a week of the starting of the engine he had no doubt the mine would be drained.

A SHAREHOLDER, having expressed himself generally pleased with the progress made since the constitution of the company, said he would like to know when there was a prospect of a dividend, when it was stated that it was premature to give an opinion considering the short time the mine had been in operation, but it was hoped that at the next meeting the mines would be in a paying conditson.

The meeting concluded with a vote of thanks to the Chairman for his able conduct in the chair.

MELINDUR VALLEY LEAD MINING COMPANY.

The first annual general meeting was held, on Tuesday, at the London Tavern,—Capt. WALROND CLARKE in the chair.

Mr. E. C. RAVENSCROFT (the secretary) read the notice calling the meeting.

The following is an extract from the directors' report:—

Jan. 8.—As the shareholders having received monthly reports of the progress of the works at the mine, the directors have no further information of importance to give them, beyond that contained in the manager's report sent herewith. The mine has in every respect made most satisfactory progress during the year. In the cross-cut driving towards the north lode, or Cwm Erfin lode, there has been of late a very favourable change in the character of the ground. The directors desire to direct particular attention to this point, as the rock, they are informed, is now showing indications leading to the belief that a body of ore is not far off. The directors have to report that 25 tons of ore sold on Nov. 11 at 14*l.* 1s. 6d. per ton, and that another 25 tons have been sold this day at 14*l.* 17s. 6d. per ton. It is expected that future sales will realise a higher price. As the ore has been up to the present time crushed by hand, which is an expensive and slow process, and as there is every prospect of there being a considerable increase in the quantity of ore raised during the current year, the directors are of opinion that machinery for crushing should be erected without delay. To enable the directors to carry out this suggestion it will be necessary to provide more capital by issuing some of the unallotted shares. The machinery at present erected is in good working order.

The following is the report of Capt. Kitto:—

Jan. 9.—Since the commencement of this company's operations we have put the whole of the pumping and drawing machinery in perfect order, cleared up the engine-shaft, and raised the pitwork, and have sunk the shaft about 3 fms. below the 14 fm. level. I am having the sinking pushed on with full force, as the lode is strong and masterly, and I believe that when we get below the base of the mountain, which can only be a few fathoms at most, the underlie will become less, and that a decided improvement will immediately take place both in its general character and productiveness. We have driven the 14 fm. level, east and west of engine-shaft, 34 fathoms, but as the western level was getting into shallower ground, I thought it advisable to suspend the driving in this direction, and to confine our operations here, while the engine-shaft is being sunk below to the driving eastward, together with proving the north part of the lode a few fathoms west from the eastern forebreast, where the part of the lode on which we have been driving has lately presented a very promising appearance. In the adit level we have made several trials by rising, driving, and stoping, and in these we have been very successful, and judging from the ore that we have already raised, together with our present prospects, I am pleased to say we have succeeded in opening up a good length of productive ore ground that will pay well for stoping, and from which I have no doubt we shall be able to raise and sell a large quantity of ore. There are several known bunches of ore gone down in the sole of the adit level, and by continuing the driving of the 14 level east we shall soon come under these, which will add very materially to our reserve of ore. We have driven the adit level cross-cut north 14 fathoms towards the great Cwm Erfin lode, and according to all previous calculations we have about 4 fathoms further to drive to reach the same. I have much pleasure in being able to inform you that present appearances are much in favour of being near the lode, the ground has got much more congenial for ore, and is now everything that could be wished for, and from the fact that the water is fast increasing and other favourable indications, I am strongly of opinion that we are getting near the lode, and should we intersect the same in the class of rock we are now passing through the result cannot fail to be highly satisfactory. This is a most important and interesting trial, and I have little or no doubt that it will be attended with very great success. We have repaired the dressing machinery, and fixed some new jiggers, which are now being worked by a small water-wheel, and have pulverised and dressed by hand over 50 tons of lead ore, and have sold the second 25 tons to-day to the Panther Smelting Company at 14*l.* 17s. 6d. per ton, being 16s. per ton more than the last 25 tons sold for. I have reminded you in previous reports that if we had crushing and other dressing machinery we could return more ore, as we now only dress the richer portion, and leave the second quality to accumulate, of which we have now a large quantity, until we have machinery for dressing the same.—JOHN KITTO.

The CHAIRMAN said the report contained nearly everything that the directors had to state with regard to the mine, and Capt. Kitto (who was unable to be present to-day through illness) in his report also gave all the information which he thought necessary up to date, so there was not much left for him as Chairman to say. He could state, however, that from the general appearance of the mine at the present time, and also from the steady progress which the mine had made since the commencement of the company, he had every right to say that it was progressing most favourably, and the shareholders might congratulate themselves upon its present position. Since he had the pleasure of meeting the shareholders at the meeting which was held soon after the formation of the company he had visited the mine, accompanied by some influential shareholders. He thoroughly examined it underground, and also inspected the machinery, which he found had been most substantially erected, and was working to the satisfaction of the manager, and the mine generally was in good order. Both to himself and the gentlemen who accompanied him the mine showed evident signs of being a valuable property, and he had every reason to be satisfied with what he then saw. There was one important point which the directors referred to in the report—that in the cross cut driving towards the north lode, or Cwm Erfin lode, there had been of late a very favourable change in the character of the ground. This appeared to be of very great importance, as the cross-cut led to the great Cwm Erfin lode, which Capt. Kitto stated was not far off, and if the lode was hit upon the success of the mine would be fully established. With regard to the ore which had been sold he thought the fact that they had sold 50 tons—25 tons in November, at 14*l.* 1s. 6d. per ton, and another 25 tons since the beginning of the year, at 14*l.* 17s. 6d. per ton—showed that there was a very favourable prospect for the future success of the mine. It was also most satisfatory to note that the second lot had realised more than the first. He was also informed to-day that another 25 tons would be ready for sale in the course of the present month. It appeared from the engineer's report that the present process of crushing ore by hand was slow and expensive, and the ore could not be crushed and pulverised so effectually as it ought to be, and in consequence of that the ore had not realised the price it would do if crushed by machinery. Therefore, it was the opinion of the directors that machinery should shortly be erected for crushing the ore, and to raise the necessary capital for that purpose it would be requisite to issue some of the remaining shares. Some months back Capt. Kitto estimated that the amount required for the purpose would be about 750*l.* There were now about 25 tons of ore at the surface which could be crushed by hand, but beyond that there was a very considerable quantity which could not be crushed by hand, which had accumulated, and which could be remuneratively crushed by machinery. He did not think it would be politic to make the outlay for the machinery at the present time, but he had every reason to think that shortly the directors would advise the erection of the machinery in order to fully develope the mine, in which case the directors would ask the shareholders to subscribe for some further capital. There were 4850 shares still unallotted, but there would be no occasion to issue anything like that number. Probably if they issued about 500 shares it would furnish the necessary amount of money. He might state, therefore, that shareholders were asked to subscribe for this additional amount of capital. The advice of another mining engineer in addition to that of Capt. Kitto had been taken. In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. BENNETT seconded the resolution.

The SECRETARY, in answer to a shareholder, said there were between 130 and 150 shareholders in the company.

The SHAREHOLDER said he asked the question because he thought there was a very small number of shareholders present.

The CHAIRMAN said he thought this was a pretty good indication that the shareholders generally had full confidence in the directors.

The SECRETARY, in answer to a question, said that the number of men employed in the mine varied; the highest cost for the week was that of last week, which amounted to 200*l.*, and that included the manager's salary, the cost of dressing, merchants' bills, and general expenses of working the mine.

Mr. KERLY said he had the greatest confidence in Capt. Kitto, and any opinion which Capt. Kitto gave was an honest opinion. He had done wisely in finding the ore and bringing it to surface before he talked of erecting machinery. For his own part, he thought the time had now arrived when the machinery could be erected with the greatest advantage. The mine was most advantageously situated, as they could make use of water-power, and so dispense with the expense of steam, and this was a great element in the success of the mine.

The CHAIRMAN, in answer to a shareholder, said that 25 tons per week would not only pay all expenses but also leave a handsome surplus for dividend.

The resolution for the adoption of the report was then put and carried.

The retiring directors, Mr. A. Boyle and Mr. Bennett, were re-elected.

The auditors, Messrs. Harry Brett and Co., were re-appointed, with a remuneration of 25 guineas.

A vote of thanks to the Chairman and directors closed the proceedings.

GREAT SNOWDEN MOUNTAIN COPPER MINING COMPANY.

A special general meeting of shareholders was held at the London Tavern, on Thursday,—Capt. CHAPMAN in the chair.

Mr. LINDSEY CROSBIE (the secretary) read the notice convening the meeting.

The report stated that, referring to the circular of the board of directors, dated Sept. 24, 1874, in which they urge the shareholders to take 1500 A shares, to provide capital for the further development of the mines, the directors have to report that although they received testimony from many of the shareholders as to their continued confidence in the value of the property, they found a unanimous feeling that no further capital would be subscribed unless the burdens upon the mines could be very considerably lightened. Acting upon this the board directed its attention to the following points:—*(a)* Reduction of capital; *(b)* re-arrangement and reduction of amount originally paid to vendors; *(c)* reduction of directors' fees and London management expenses. And they are now able to report that, provided £5000, the sum estimated by the manager as required for the development of the mines, be subscribed, or promised to be subscribed, by Feb. 27, the vendors will allow their present first charge upon the property, amounting to £8500, to be made a second charge, so as to enable £5000 to be raised as a first charge. And, further, in order that the capital of the company may be reduced from 120,000*l.*, as it at present stands, to 32,000*l.*, they will return for cancelment 18,000*l.* of the shares issued to them as vendors, which, with the cancelment of 70,000*l.*, the amount of unissued shares, will make the required reduction. And that, subject to the like condition, the directors being desirous to facilitate to the utmost of their power this arrangement will cancel all the arrears of fees owing to them, which will amount, on Feb. 14, to 2308*l.* As it is necessary for the carrying out of this scheme that the whole 100 first mortgage debentures should be taken up by Feb. 27 next, the board of directors beg to point out that it is of vital importance that the shareholders should do all in their power to insure the required amount being subscribed. The report of the general meeting has already informed the shareholders of the directors' opinion of the value of the property, and since then the advance in the price of copper has greatly improved the prospects of the company. It, therefore, rests with those already interested in this undertaking to come forward and insure the subscription of the small amount of additional capital required to bring it to a successful issue.

The CHAIRMAN said he regretted that the company's chairman was absent, owing to illness, in consequence of which he (Captain Chapman) had been requested to preside upon the present occasion. The report addressed to the shareholders spoke for itself; its main features were the reduction of the company's capital, the re-arrangement and reduction of amount originally paid to vendors, and the reduction of directors' fees and London management expenses. The manager (Capt. Spargo) was present, and would afford any information that the shareholders required as to the position and future prospects of the mine. He then moved the following resolution:—

"That the directors are hereby authorised to issue 100 first mortgage debentures of 50*l.* each at par, payable in four instalments of 12*l.* 10s. (the first of which on application, the second on allotment, the third at three months, the fourth six months after allotment), to be redeemable in five years, and to bear interest at the rate of 10 per cent. per annum, paid half-yearly. These will be a first charge upon the entire undertaking, including buildings, machinery, plant, and profits of the company, and will over-ride all existing charges upon it. That the capital of the company be reduced from 120,000*l.* to 32,000*l.* That 30 second mortgage debentures and 200 third mortgage debentures of 50*l.* each, redeemable in five years, and bearing interest at the rate of 5 per cent. per annum, payable half yearly, be created and issued in payment of existing liabilities to the vendors and others. As the arrears of directors' fees will be written off under this arrangement this issue will be sufficient for the purposes required. That the number of directors be not in future more than five, and that they be entitled to set apart and receive a sum of 250*l.* per annum for their remuneration."

Mr. GOWLAND seconded the proposition.

Mr. MASSEY asked if the company had power to issue debentures without the sanction of each shareholder?

The CHAIRMAN said the solicitor advised that they were in perfect order to pass this resolution without the consent of every proprietor. It was of vital importance that these debentures should be taken up by those who had especial interest in the success of the mine. Capt. Spargo assured them that with this 5000*l.* which these mortgage debentures would provide he would be able to carry on the development of the property to successful results. The vendors, Mr. Coates and Mr. Young, had agreed to an arrangement, which was included in the second and third mortgage debentures; and it was expected and hoped the outstanding bills in connection with the expenses in the formation of the company would also be redeemed by those debentures. At all events, if the shareholders were disposed to aid the company by subscribing the 5000*l.* for working capital, then all these other subsidiary arrangements would be left to the various parties who were interested; and it seems so clearly their interest to fall into the views of the shareholders that there could be but little doubt that they will be carried out.

The SECRETARY read the report of the manager, which showed that by a further expenditure of 1000*l.* in machinery a profit of 1829*l.* could be obtained from treating the halvans; but that an expenditure of 3000*l.* would be required underground before the mine could be brought into a permanently profitably condition; it was thus estimated that 5000*l.* would fully meet all the requirements.

Mr. ELLERTON asked who were the present directors?—The CHAIRMAN said the same as those who formed the board at the commencement of the company, and held the necessary qualifications—25 shares.

Mr. ELLERTON said they were the gentlemen who started a mine that was supposed to require 80,000*l.*, and allotted shares when only 10,000*l.* had been subscribed, with preliminary expenses 3500*l.*, and remuneration to the directors 1500*l.*, whilst the board had a money stake in the company of only 125*l.*

Mr. CLARKE said these questions were discussed at the last meeting, and the directors agreed to call a meeting to re-adjust these questions. The directors had

very properly, and he thought honourably, met the wishes of the shareholders in every way.

Mr. M'EWEN said the directors were under the impression that everything stated by Mr. Etheridge would prove to be facts. Mr. Etheridge was one of the first authorities on such subjects, and he stated that 10,000*l.* would be fully sufficient, and Mr. Etheridge, in whom they implicitly relied, told them there were halvans to the value of at least 20,000*l.*, which could be realised at once. What could the directors have done more? As to the directors' remuneration they had never taken 1s., comparatively speaking, and had never intended to claim the amount set apart in the Articles of Association.

Mr. CLARKE asked if any of the halvans had been sold?——The SECRETARY said about 12 tons of halvans ore, and about 51 tons of ores from the mines, had been sold, realising 181*l.*, and the manager estimated that there were undressed ores of the value of 300*l.* remaining on the dressing-floors.

Mr. CLARKE asked Capt. Spargo if he was well satisfied as to the value of the mine?——Capt. SPARGO said his confidence in the mine had never been at all shaken—in fact, it was now looking better than ever, but his acquaintance with it had only extended over four months.

Mr. CLARKE asked what were the expenses per ton for treating the halvans?

The SECRETARY said the estimate for carriage was 18s., cost of dressing and making ready for market 6s. 3d., and for getting 6s. 6d., making a total of 1*l.* 10s. 9d. The ore was dressed up to 5¼, and they realised for it 13s. per unit.

Capt. SPARGO said they should be able to dress up to a higher percentage.

A SHAREHOLDER asked how the second and third mortgage bonds were to be applied?——The CHAIRMAN said there was a balance due to the vendors of 8500*l.* and bills outstanding 3000*l.*

The SECRETARY, in reply to a question, said that the further liabilities which appeared in September last had been met by a call.

The CHAIRMAN, in reply to a question, said it was the intention of the board to reduce the London expenses as much as possible, at the same time maintaining the company in a favourable position. They had been extremely sorry to be compelled to accept the resignation of the secretary, but other arrangements would have to be made. As he had already said, the vital point for the shareholders was that these 5000*l.* first mortgage bonds should be taken up; if they failed to obtain subscriptions, the arrangements with the vendors would necessarily fall through.

Mr. MASSEY said he had already put 50*l.* into the company, and he was willing to take his proportion of the debentures. He considered the directors had behaved very honourably indeed in not taking their fees. He had been to the mine himself, and everyone spoke of it most hopefully, and that it was a great pity the shareholders did not come here and look after their own business. He went there totally unexpected, and all he heard in the neighbourhood was of a favourable character. It was a question with him whether the carriage would not make the produce of much less value than it would otherwise be.

Mr. GOWLAND said the question was, would the shareholders come forward and help the directors, who had but one object in view—the success of the company. He believed the mine to be an exceedingly rich one, but the capital in the first instance was too contracted for so large a concern. The directors were inclined to take a portion of the debentures, if, by uniting with the shareholders, 5000*l.* could be subscribed to work the mine, from the produce of which profits would be realised apart from the halvans. It would be very foolish indeed if the shareholders did not carry on this enterprise to a successful issue, and he trusted every shareholder would come forward and subscribe his proportion towards the debentures.

Capt. SPARGO said the halvans were on the side of the mountain, and could not be utilised until a certain amount had been expended for dressing machinery; the truth of Mr. Etheridge's estimate could not be proved for years—they were five times the value of those at the Parys Mountain Mine.

The CHAIRMAN again expressed a hope that shareholders would come forward and subscribe the necessary capital, for unless it was forthcoming they could not possibly go on. It seemed a pity to have expended so much, and to have put the mine in the position it was, and allow it to be all lost, when by the small amount of 5000*l.* a permanent dividend-paying property might be established.

The resolution was put, and carried unanimously.

A vote of thanks to the Chairman and directors closed the proceedings.

NEW PRINCE OF WALES SLATE COMPANY.

An extraordinary general meeting of shareholders was held on Thursday, at the offices, St. Clement's House, Clement's-lane.

Mr. THOMAS HARVEY (the Chairman of the company) in the chair.

The SECRETARY having read the notice convening the meeting, the Chairman declared the meeting duly constituted.

The CHAIRMAN then addressed the meeting, explaining that the object of the issue of the debentures was to pay off the claims of the ground landlord, the effect of which would be that the whole of the property held by the company under lease would be free from rent, royalty, or compensation for surface damage for the term of 31 years. Having entered minutely into the particulars of the sale by the company to the Cwm Dwyfor Company of part of the company's property, of the purchase by the company of the Gorsedda property, and of the sale of the railway to the Gorsedda Junction and Portmadoc Railways Company, he moved the following resolution:—"That the directors be, and they are hereby, authorised to raise the whole or any part of the sum of 10,000*l.* for the purposes of the company by the issue of 10 per cent. mortgage debentures, to form a first charge on the property of the company, on such terms as the directors may in their discretion think fit, and that any director of the company may subscribe for and become the holder of any such debentures."——Mr. F. C. HYDE seconded the resolution.

Mr. C. W. SLEE stated that having been interested in the company for several years he had in August last personally visited the estate, and from what he saw he felt confident that the company had a valuable property, and that it only required the shareholders to assist in providing the necessary funds to ensure success.

The resolution was then put to the meeting, and carried unanimously.

Mr. BUTT as representing a large number of the old shareholders, said that very great credit was due to the Chairman for his disinterested exertions on behalf of the company, and that he was sure all present would cordially support the vote of thanks which he had to propose to the Chairman.——Mr. STEWART seconded the resolution, which, having been put to the meeting, was carried unanimously.

The CHAIRMAN having briefly responded, the meeting terminated.

'For remainder of Meetings see to-day's Journal.]

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL (Gold).—Dec. 1: Quantity of quartz crushed for the month ending Nov. 4, 3315 tons; pyrites treated, 20 tons; total gold obtained, 692 ozs. 7 dwts., or an average per ton of 4 dwts. 11¼ grs.; receipts, 2694*l.* 0s. 4d.; payments, 2478*l.* 4s. 3d.; profit, 215*l.* 16s. 1d., which, together with the sum of 1250*l.* 7s. 9d. brought into this month's account, made an available balance of 1466*l.* 3s. 10d., which was carried to next month's account.

ENGLISH AND AUSTRALIAN COPPER.—Dec. 5: All the furnaces, both at Port Adelaide and Newcastle, are in full work. The quantity of copper shipped since date of last advices was about 178 tons.

SCOTTISH AUSTRALIAN.—The directors have advices from Sydney, dated Nov. 28, with reports from the Lambton Colliery to the 25th. The sales of coal from the Lambton Colliery for the month of October amounted to 10,137 tons.

YORKE PENINSULA.—The directors have advices from the committee of inspection of the company at Adelaide, dated Dec. 3, with reports from the Kurilla Mine to Nov. 30. Capt. Anthony reports that after some delay, occasioned by the length of time during which the machinery and pitwork had been standing unused, he had succeeded in draining the mine to the 25 fathom level by Nov. 29. He states—"Hall's shaft is repaired to the 25 fm. level, and is ready for drawing through, and Deeble's shaft is repaired as far as the 15 fathom level, and the accumulated stuff is being discharged preparatory to cutting down the new (Granger's engine) shaft, west of Deeble's. . . . At the recent discoveries, east of Hall's, trial pit A (where ore was first found) has been deepened to 10 fathoms from the surface. The lode is regular and defined, with a good south wall, and contains pockets of green and grey ore, which indicate unmistakeably deeper deposits. . . . Having reached water level I put the men to drive a cross-cut north at 9 fms. deep (above the water-line) to test the ground where so much veinstone and copper stains have been recently found in the costeaning works. After driving 2 fms. through mica slate a branch was met with, containing green and grey ore. . . . At the other new lode, 33 fms. north of A, I put four men to deepen the pit, where ore was discovered in September last, and at 3 fms. from the surface came on a leader of rich blue and green ore, 9 in. wide. Of course, I continue to follow it, and have reached 5 fms., where the lode is 2 ft. wide, composed of soft gossan, friable quartz, and ore, and of a most promising nature. . . On the whole, the prospects of the mine have materially improved during the month, having special reference to the new lodes.

ANGLO-AUSTRALIAN (Gold).—Mr. Clark (Dec. 2) writes—I have the honour to acknowledge the receipt of your letter of Oct. 2 last, covering second of exchange for 250*l.*, first of which I acknowledged in my letter last month, also covering first of exchange for 250*l.*, which has been collected and placed to credit of your company. You will see by the mine captain's report, which I enclose herein, the work is pushed on with all possible speed, and we hope to have the necessary winding gear completed within a week. I have just instructed Capt. Raisbeck to proceed to Ballarat to purchase trucks and cages, which I have had offered at a very moderate figure. Capt. Raisbeck writes under date—I have the honour to report progress since the 3d ult. I have centered east shaft to the 320, altered the ladders in shaft, and made various minor alterations to comply with the mining statute. We have commenced driving the cross-cut east at the 320, and have driven 9 ft.; the present end is 38 ft. from the shaft; the water has increased threefold since we commenced to drive. We crushed a few tons of stone to clear the passes, which gave 1 oz. 10 dwts. of retorted gold. I do not expect to get much stone for some months. Should we meet with payable stone in the cross-cuts we cannot work it until we have holed. We have crushed 51 tons of stone for the public during the month. The contractors in the cross-cut at the 200 ft. level have driven 23 ft., but finding price insufficient gave up the contract on the 19th ult. We advertised for fresh tenders, and again let it on the same conditions at 23s. 6d. per foot; they have driven 7 ft.; the present end 52 ft. from the shaft. We have been disappointed in not getting the castings for the winder through a breakage in the foundry; they will not be finished until the 8th inst. We advertised for trucks and cages. I think we shall be able to purchase most of the material we shall require on very reasonable terms this week in Ballarat.

AUSTRALIAN CENTRAL GOLD.—Mr. Gill (Dec. 1) writes: Capt. Anguin and myself have discussed the suggestion made by Mr. Harvey in reference to sinking a new shaft 300 ft. from the present one, and we both agree that to do so would be useless expenditure. Our present shaft, though far too small for an alluvial mine, can be made, at no very great cost, to last the mine out. There are many valid reasons why Mr. Harvey's suggestion could not be carried out with advantage, which that gentleman would perceive at a glance were he on the ground. The cost of a new shaft, if drained by the present machinery, may be estimated at about 5*l.* per foot, the cost of putting in a deep level would range from 15s. to 25s. per foot, according to size. With reference to an apparent discrepancy between Captain Anguin's estimate and my own as to the length of reef drive required, Capt. Anguin's mention of 300 ft. means only the distance required to tap the newly-discovered deep ground, while my statement as to 800 or 1000 ft. means that whenever we follow the gutter a deeper level is necessary, not only for drainage, but for ventilation. It is just possible that in following the sinuosities of the old river bed twice or thrice that distance of deep level may be necessary. I was only speaking approximately. I am anxiously awaiting some definite information as to the decision of the shareholders whether fresh capital can be raised. Unfortunately, the cost of keeping the mine drained absorbs so much money, the actual cost per week being from 15*l.* to 17*l.* For the past three months Captains Anguin and Saunders have been on half-pay; now I am unable to pay them at all, keeping the little I have for firewood and outside expenses. We are all willing to submit to every personal inconvenience sooner than see the mine sacrificed.

THE KURILLA.—We are glad to see this mine again showing signs of life and activity. Recently the captain, who is reticent as to the objects of the company in its resuscitated character, while carrying on some costeaning works on the eastern part of the property, was fortunate enough to drop upon a deposit of rich ore just below the clay. Guided by this the Devon Consols people have since discovered what appears to be a splendid run of ore ground, and on the same lode, as proved by the Kurilla engine draining the shaft sunk on it. More recently the captain of the Kurilla has had the good fortune to discover an entirely new lode, about 60 yards north of the Kurilla old lode, and from which, at a depth of 3 or 4 fathoms, some rich ore is being raised, while the soft yellow gossan, the matrix of the ore, strongly indicates a permanent lode.

DEVON CONSOLS.—On Friday as men were sinking a costeaning pit 17 fms. west of the New Discovery, Kurilla lode, and about 8 ft. down, they came upon a splendid bunch of ore, composed of green and grey carbonate, since then the men have been sinking further; the lode is improving as they go down, and the discovery has every appearance of being such another bunch as was found in the New Discovery in which the engine-shaft is being sunk. Altogether, the mine is in a very hopeful condition; and, as a matter of course, the New Discovery revelation justifies the most brilliant anticipations, not only for itself, but the adjacent Kurilla.—*South Australian Register* of Dec. 5.

THE DIAMOND FRAUD TRIAL.

After ten days' patient hearing before the Lord Chief Baron of the Exchequer and a special jury, the important case of Rubery *v.* Grant and Sampson has concluded, with a verdict exonerating Baron Grant, and giving Mr. Rubery a verdict for 500*l.* damages against Mr. Sampson—whose proceedings in the matter, however, are certainly likely to meet the greatest satisfaction of the public generally, since it is acknowledged, even by those who are not his friends, that what he published "saved millions of money to the people alike of England and the United States."

The Lord CHIEF BARON, in summing up the case to the jury, said that it was one which involved questions not only of deep interest to the plaintiff and both defendants, but it was also of general importance to the whole community. The circumstances of the case were of a peculiar nature, and the duty they had to perform involved points of considerable difficulty, though he trusted they would not be found to be insuperable, and at all beyond their power to meet and overcome. Their duty was to administer perfect and impartial justice according to the law to each and every one of the parties in the case. Considering the multifarious nature of the evidence in the case, he thought it might assist the jury if he began by laying before them a concise history of the circumstances of the case, as far as they consisted of unquestionable facts. The plaintiff, Alfred Rubery, at the present time a young man of 34 years of age, was brought up to the hardware busines. In 1862 he made a voyage to New York upon some business, and he afterwards proceeded to San Francisco, where, unhappily, he made the acquaintance of Harpenden, and they became friends and companions. In the following year, 1863, when the war was waging between the Confederates and the Northern States, the plaintiff, Harpenden, and one or two others obtained letters of marque from Jefferson Davis; a privateer was fitted out, but it was seized, and several of those on board, including Harpenden and the plaintiff, were indicted for treason against the United States. They were sentenced each to ten years' imprisonment and a fine of $10,000, but at the instance of Mr. John Bright the plaintiff received a free pardon. In the following year the plaintiff returned to this country, and in 1867, while he was resident at Birmingham, he received a letter from Harpenden introducing to him a person named Bigelow, who was engaged in forming, or endeavouring to form, a mining company. The plaintiff came to London and rendered him what assistance he could in this and other matters. Afterwards the Lincoln Hill Company collapsed, as the mine appeared to have failed. About 1870 the Pyramid Range Company appeared to have come into existence, if it were ever properly formed. Plaintiff appeared to have rendered assistance to Harpenden rather as secretary, or in some capacity in reference to both these companies, but he did not seem to have had any interest—that was to say, to have possessed any shares—in either of the undertakings. About this time the plaintiff became acquainted with Baron Grant. Harpenden became acquainted with Baron Grant through the introduction of the late Mr. Doulton, then M.P. for Lambeth, and then it was that a most important conversation, so far as this case was concerned, was alleged to have taken place. The Mineral Hills Company was formed, and an agreement entered into between Harpenden and Baron Grant, that certain advantages should result to the former from the working of the company, and an arrangement was come to between Harpenden and the plaintiff, that the latter should derive some benefit from the arrangement between Harpenden and Grant. The learned Baron then went into the details of the dispute, and passed on to the first rumours of the diamond discoveries in America. Several stones appeared to have been brought to England, which were tested and found to be genuine. The plaintiff, from domestic trouble, or some cause or other, was desirous of travelling, and he appeared to have left England, not as it seemed with any view at first of taking any part in the diamond matter. He went to New York with Harpenden, and after staying a short time there he went on to San Francisco. His Lordship detailed the visit of the plaintiff to the diamond fields in the two expeditions, the visit of the latter to Chicago and Louisville and his return to England; the purchase of the diamonds for the purpose of salting the mine, and remarking that for the purposes of the enquiry he should assume Harpenden as well as Arnold and Slack to have been parties to the fraud, he went on to state to the jury that he would leave three questions for them to decide with reference to the articles which appeared in the *Times* newspaper. The first question I shall ask you (said the Lord Chief Baron, addressing the jury), will be, are those articles in the *Times* in your judgement libellous, defamatory to the character and injurious to the reputation of the plaintiff, Alfred Rubery; or, in fewer words, are the three articles, is any one of them libellous, and, if one or two, which? The next question will be the charge that you will hold these libels to impute to the plaintiff—is the charge, or rather these charges, if there be more than one, in your judgement established or proved by the evidence, and is the plaintiff guilty or not guilty of the offence or offences imputed to him by these libels, if you hold them to be libels; and if you hold him to be guilty, I need not say what your verdict will be. Thirdly, if you find him not guilty of the offences imputed to him by these libels, assuming that you find them to be libels, and if the justification be not proved, what damages do you find? I shall then put separately and distinctly another question, and that is—whether the defendant, Baron Grant, was a party to the publication of these three articles, and if of one or two of them, which? His Lordship, commenting on the remarks of Mr. Giffard and the Solicitor-General with reference to the liberty of the press, continued: I join in all the eloquent remarks the learned counsel made concerning the liberty of the press. Undoubtedly the liberty of the press is a precious and priceless inheritance of the people of this country, and I trust that the youngest among us will not live to see the day when the liberty of the press in this country shall ever be weakened or impaired; and sure I am that as long as the bench of justices is constituted as it now is, the judges of the land will ever hold the liberty of the press to be sacred and indestructible. Let me now, however, apply this doctrine, which is part and parcel of the law of England, to the case before us. It is within the liberty of the press, and it is undoubtedly a privilege and a right of the proprietor of any newspaper, to denounce a fraud, if a fraud has been committed or attempted, and to warn the public against that fraud. It is their liberty, their privilege, and their right to comment fairly and fearlessly upon all public events, upon all public questions, and upon all public matters whatsoever; but it is not their privilege and liberty, it is not within the liberty of the press, and it is not the privilege or the right of the proprietors of any newspaper whatsoever to defame the private character of any man, or to charge any individual with fraud, or any other crime or species of crime, unless they are prepared to establish or prove the truth of the charge in a public court of justice. Applying the law I thus lay down in relation to the liberty of the press to the articles in question, let me now call your attention to these articles, and put it to you whether, in your judgement, the substance, effect, and meaning of these articles does come within the sacred liberty of the press, or whether they are defamatory to the private character and injurious to the reputation of the individual who now claims damages at your hands in this action. The learned Baron then read the articles in the *Times* containing the alleged libellous statements. In one of them the plaintiff, it was said, was charged with piracy. Upon this he (the Lord Chief Baron) would offer no opinion, for in a case of this kind he should desire that the verdict should be that of the jury and no one else, but he would put to them what was the crime of piracy. A pirate was the common enemy of mankind, a sea robber, a man who, if he were not a murderer, it was by accident only, because a pirate was a man who attacked unarmed vessel navigating the broad seas, and if he met with resistance there was bloodshed, and perhaps murder. It was true the articles in the *Times* did not say that the plaintiff was guilty of piracy, but at the same time they did not state that he was not guilty. There was, as he had before reminded them, no more pretence for saying that the plaintiff was charged with piracy than that he was charged with arson, or murder, or any other of the most atrocious crimes that a man could be convicted of. Again, alluding to this point in another part of his address, his Lordship pointed out that Mr. John Bright had taken the trouble to interfere on the plaintiff's behalf, and to bear testimony to his character to the United States Government, so as to obtain Rubery's pardon and release. Weighing the evidence which had been called and read, his Lordship told the jury that they must dismiss from their minds all evidence as to proceedings and conversations which had taken place in the plaintiff's absence. With reference to the expedition to the diamond fields, there was not the slightest evidence to show that, although he accompanied Harpenden, Roberts, and half-a-dozen more, and there was constant communication between them, there was not one word which had been spoken or one act done which would convey to the mind of the plaintiff even a suspicion that the mine was a fraud. As to the plaintiff's connection with the Lincoln Hill and the Pyramid Range, he never had the slightest interest in them as a principal. After referring to several other transactions of the plaintiff, his Lordship again turned to his connection with the diamond discovery. He first heard it through Harpenden, who received a letter from Roberts stating that diamonds had been discovered, and a few weeks afterwards there was another letter stating that one of the stones had been found to be a valuable diamond, and one of them sent from California was seen by the plaintiff. The plaintiff went to New York, and there, for the first time, it was proposed that he should join the expedition. He went to the diamond fields, and undoubtedly found the first diamond, and the question for them to consider was whether that was any evidence that he knew the diamonds had been placed there. Turning to the second expedition, it had been said that Rubery had acted as guide, and the question was whether there was anything to show that he had acted in that capacity. He had sworn in this Court that he had not so acted, although one or two persons had stated that he had.——Sir H. JAMES remarked that five witnesses had sworn that he had taken the part of guide.

The Lord CHIEF BARON, continuing, recounted that incidents of the second expedition, and the interview of the plaintiff and those who accompanied with the editor—then a reporter—of the *San Francisco Chronicle* respecting the alleged discoveries. Mr. M'Carthy stated in his evidence that the plaintiff had not objected to the ant-hill story, but to the statement that he took a "nobbler." It was for the jury to consider whether Mr. Rubery treated the whole thing as a burlesque and a joke, or whether, if he did not remonstrate with the reporter as to the statement made, he was a party to this fraud. Turning to the visit of the plaintiff to Louisville, his Lordship remarked that this was a part of the case upon which great reliance had been placed by the defendants' counsel, who called upon the jury to treat it as convincing evidence that Rubery was a party to the fraud. Arnold had been one of the original projectors, and he was possessed of a large sum of money—about $200,000, or 40,000*l.* sterling. This money the plaintiff, at the request of Harpenden, took from Louisville to San Francisco, and the question for the jury was whether he was still ignorant that a fraud was being carried out and that this was the proceeds of the scheme, or whether he was aware that this was a swindle, and that he was conveying the proceeds to Harpenden. As to the purchase of the diamonds and rubies for the purpose of "salting" the mines, undoubtedly if it had been shown that Rubery was ever present at any interview between Arnold and Harpenden when the precious stones were mentioned or alluded to, or any stones produced or anything took place which could be shown that it was done with his knowledge, then it would be very strong evidence indeed against him. Whether that were so was for the jury to consider, and he would offer no opinion upon the subject, but he was bound to point out that if Rubery stood indicted here for purchasing these stones for an unlawful purpose, such evidence would not be sufficient to convict him. Leaving it to the jury to say whether or not Mr. Sampson had made out his plea of justification, his Lordship went on to deal with the case against Baron Grant, and to put it to them whether or not he was a party to the publication of these articles. The plaintiff had stated that on his first visit to Baron Grant the latter had deliberately represented and asserted that he had Sampson under his thumb—in other words, that taken together with subsequent assertions, he could make Sampson write up or write down any company he thought fit, and that, therefore, if he (Rubery) had any company to dispose of which was paying a dividend he should be glad to entertain the proposition. As to what had passed between Grant and Sampson, the former had stated that sums of money amounting in all to several thousands of pounds had passed between them in the years 1870, 1871, and 1872, and it appeared that there was no consideration given for the money. If, as was alleged, this money was given for writing articles for or against certain joint-stock companies, it was an alarming state of things, because upon the faith of a good notice a bad company would be successful, and might, after the promoters had made their money, collapse and ruin the shareholders. If such a power existed or did exist, it was some consolation to know that they might feel well assured that the honourable and able men in whom was vested the supreme direction and control of the *Times* would take, if they had not already taken, steps that such a power should exist no longer. (Suppressed applause.) His Lordship then read at length the whole evidence given by Baron Grant during his examination, and observed that he was utterly at a loss to understand the consideration Baron Grant received from Mr. Sampson for all the money he handed to this gentleman. The jury, however, should hesitate long before they found a man guilty of such an enormity as that charged against Baron Grant of giving bribes to secure the publication of a certain article, or as that charged against Mr. Sampson of receiving bribes for his literary support or condemnation of any scheme, company, or public enterprise in the money articles of the *Times* newspaper. The learned Judge then concluded his able and elaborate address to the jury by putting to them the several questions already mentioned in the earlier portion of his speech.

Mr. DAY, Q.C., on behalf of Baron Grant, and Sir H. JAMES, Q.C., on behalf of Mr. Sampson, handed up to the Bench bills of exception to the Lord Chief Baron's ruling.

The jury, after an hour and-a-half's deliberation, thus answered the questions put to them:—1. Are the three articles in the *Times*, or any of them, libellous?—Yes. 2. If libellous, is the plaintiff guilty of any of the offences imputed to him?—No. 3. If the plaintiff is not guilty, what damage is he entitled to?—500*l.* Lastly. Was the defendant, Baron Grant, a party to the publication of any of the libels?—No.

The Lord CHIEF BARON: Then, gentlemen, you will find for the defendant, Baron Grant, and for the plaintiff, Mr. Rubery, with 500*l.* damages.—The Foreman: Yes, my Lord.

The Foreman then handed in the following recommendation by the jury, which was read by the learned Judge:—"The jury, having given to the evidence their most serious and impartial consideration, unanimously agree to deprecate further legal proceedings as threatened in this case.—The Lord CHIEF BARON: That is a matter for the counsel.

The subjoined letter of Mr. Sampson is of considerable interest in connection with the case:—

SIR,—In his speech on the defence in this case Mr. Giffard, in pointing out that the *Times* had nothing to do with any financial proceedings between myself and Baron Grant, stated that we might make our own excuses, but that by "whatever motives" the articles on the Diamond Fraud were dictated, they were true in substance and fact, and a benefit to the commercial community.

This statement is for the moment the only one in the trial that claims from me any remark. The reply to it is, first, that I have nothing to excuse; and, next, that neither the name of Rubery nor a word in connection with him have ever passed between myself and Baron Grant. The articles were dictated simply by the motive of every article I have ever written—that of upholding and furthering the interests of the public.

During my connection with the *Times* of more than a quarter of a century not a single statement I have made has been, or can be, impugned. Under these circumstances I should never feel called upon to allude to any personal matter between myself and individual friends or connections. But as far as Baron Grant is concerned the remarks of Mr. Giffard render it expedient to recall the facts. Several years previously to 1871 the loss had occurred to which the Baron referred in his testimony. In the interval he had repeatedly alluded to it, and in 1871 he urged that I should allow him, out of such commissions as he was then realising, to make it up. In this wish I felt he was actuated by a sense of support and sympathy I had accorded to him in a previous period of much anxiety against many unjust attacks, and I acceded to it. Hence the history of the cheques. Baron Grant, in his evidence, spoke of my having complained of the loss, but I never complained in the way of reproach, or as imputing reponsibilities to him. The whole of my other financial transactions with the Baron during the ten years I have known him intimately have been four in number, and these were wholly irrespective of any literary relations. Notwithstanding the extent of his engagements, and their having included many in conjunction with some of the most eminent establishments, there are few financial persons with whom I have had less communications on business affairs. As to any mystery raised about allotment of stock, it is notorious that not only as a rule I have never made application as City Correspondent of the *Times*, but that, utterly repudiating as I do the idea of a claim being based on any such ground, I have never in any case applied except as an independent individual, prepared to pay for, and, if requisite, to hold any amount for which he might deem it prudent to subscribe.

When it can be shown that, after having throughout my life been habitually consulted from all regions, and on nearly all the great operations and enterprises of the world, I have given advice, or made a suggestion inconsistent with a desire to promote the safety of the public, it will be time for me to begin to make excuses or to explain motives.

My intention to retire from the *Times*, long known to my friends, in order to secure an interval of relaxation preparatory to a resumption of relations with the public in another form, was notified many months before I was aware of the nature of the Rubery action. In the combinations subsequently developed there has been but little power of inflicting annoyance upon one who has the consciousness of having steadily worked to protect his countrymen from the astute and gigantic contrivances of the New York and San Francisco Rings, and of having in the diamond swindle alone, according to the words of Mr. Giffard, saved millions of money to the people alike of England and the United States. M. B. SAMPSON.

UTILISATION OF SLAG.—During leave of absence in August last, Mr. C. R. Roelker, of the United States Navy, visited the ironworks of the Georg's-Marien Hutte, near Osnabrück, in the province of Hanover, Prussia, and witnessed there some processes which, from their novelty and usefulness, he thinks will be of general interest. The most important (he says) are those which turn the slag of the smelting furnaces into useful material. This necessary product in the manufacture of iron, which is a source of such considerable inconvenience and expense, has been heretofore used for making road beds; it is also sometimes run into moulds, and formed into building stones. The process invented by Mr. Hartmann, the former manager of the above-mentioned works, turns it into more extensive usefulness. The high furnaces are provided with a continual overflow for the slag, which runs through a narrow gutter formed in the sand into a shallow pit, through which a small stream of water is kept running. By this chilling process the slag assumes the form of a fine gravel. An endless chain at once lifts the slag out of the pit, and loads it upon cars. By grinding this material fine in a cement mill, it is formed into an excellent sharp building sand. The great bulk of it, however, is used without further reducing its grain for making bricks.

For this purpose it is mixed with one-half of its bulk of mortar in a trough in which three shafts provided with long blades are revolving. It is then shoveled into the brick machine, each of which turn out about 25 bricks a minute. These bricks are piled up in the open air for drying, and are ready for use after about six weeks. They continue to harden on exposure to the air, and are said to possess greater strength than ordinary burnt bricks. They are extensively used for all kinds of buildings, their light-grey colour producing a very pleasing effect, and the roughness of their surface fitting them particularly well for retaining a coating of mortar. They cannot be used, however, for foundation walls, as by the absorption of moisture their cohesiveness is impaired.

The most interesting process is the following:—As a thin stream of the fluid slag falling from a narrow gutter passes the nozzle of the steam-pipe, a jet of steam is blown through it, and by this simple process it is solidified in the form of most delicate fibers, resembling asbestos or spun glass; and it falls to the ground like a loose mass of greyish wool. This material is an excellent non-conductor of heat, and is used for covering steam-pipes, boilers, &c. The sole expenditure in its manufacture is that of the steam, the exact amount of which could not be ascertained. The material is sold for about 25 per 1 cwt. The steam-pipe is about 1½ in. in diameter, and the nozzle is simply a pipe flatened and then curved into a semicircular form, in order to give the most advantageous shape to the steam-jet. The steam used has a pressure of about 50 lbs. per square inch.—*Scientific American.*

COMPRESSING FUEL.—Messrs. LEWIS and JONES, of Swansea, propose to carry two moulds on a reciprocating frame. As the frame reciprocates the moulds are filled and their contents compressed and expelled.

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FOREIGN MINING AND METALLURGY.

The Belgian iron trade has not recovered from the depression which has characterised it of late, and industrial intelligence of any interest makes almost complete default. The new steelworks of the Cockerill Company, at Seraing, have been working successfully, and all those who have taken part in their development have reason to be well satisfied with the result. The first ingots were cast towards the close of December, 1874, and working operations have since been carried on regularly. The steel produced from Spanish and African minerals is of finer quality in respect of grain and resistance than that obtained from a fusion of English pig. The first blast-furnace has attained a production of 40 tons per day; this production will soon be carried to 50 tons. A second furnace will shortly be lighted. Several other Belgian metallurgical concerns are said to be contemplating an application of a portion of their capital to the production of steel. The Germans have also so fully appreciated the future which is reserved for steel that in 1874 they had established the considerable number of 69 converters, distributed among 14 distinct works. This total of 69 exceeds by 30 the corresponding number of converters existing in Germany in 1872. It is rather doubtful whether the Germans have not for the present rather overdone their appliances for the production of steel, as they cannot yet hope to dispose annually of 500,000 to 600,000 tons of Bessemer steel. Belgium appears to be more favourably situated as regards foreign markets than its neighbours on the Rhine. Herr Krupp has just announced to his numerous body of workpeople, by a special proclamation, that he is under the necessity of reducing the wages paid by him in order that he may be enabled to produce steel at a cheap rate, and so grapple successfully with the competition by which he is assailed.

The report of the Chief Engineer of Mines of the province of Hainaut for 1873 gives some statistical information with reference to the metallurgical industry of that province which may be reproduced with advantage. The number of blast-furnaces in the Hainaut in 1873 was 46, of which 34 were active; their total production in 1873 was 33,950 tons of casting pig, and 358,210 tons of refining pig. The consumption of coke in the blast-furnaces of the Hainaut in 1873 was 517,530 tons. The average consumption of coke per ton of pig produced in 1873 was 1·320 tons; this total would seem to indicate that some considerable improvements may yet be realised on this head. The coke ovens of the Hainaut consumed in 1873 some 1,662,442 tons of coal, in order to produce 1,203,200 tons of coke. The number of puddling-furnaces in the Hainaut in 1873 was 396 in activity, and 100 not in activity. The number of re-heating furnaces was 132 in activity, and 48 not in activity. The consumption of coal in the ironworks of the Hainaut in 1873 was 597,410 tons, for a production of 268,408 tons of iron. It is calculated that in 1873 every ton of finished iron made in the Hainaut absorbed in its production from first to last 4·033 tons of coal, or, in plainer English, rather more than 4 tons. As compared with 1872, the production of casting pig in the Hainaut in 1873 presented a decline of 8400 tons, while that of refining pig showed a falling-off of 34,930 tons. As compared with 1872, the production of miscellaneous descriptions of iron at the rolling mills in 1873 declined to the extent of 22,691 tons; the production of rails increased, however, in 1873, as compared with 1872, to the extent of 11,513 tons. The total value of the metallurgical production of the Hainaut in 1873 was 5,606,480*l*., or 597,458*l*. more than the corresponding value for 1872. The high, not to say excessive, rates prevailing for coal in 1873, and the advance in wages in the same year, occasioned so considerable an increase, however, in the cost of production that no additional profit was realised in 1873. The aggregate number of workmen employed in the iron trade of the Hainaut in 1873 was 14,582.

The new year has not brought with it any noticeable improvement in the French iron trade, and everything seems to indicate that the dulness now prevalent will be continued for some time longer. Pig has exhibited a downward tendency, and this circumstance may have some effect also on the iron trade. In the Meurthe-et-Moselle there is a marked weakness in business. White refining pig is held at 3*l*. 1s. 8d. per ton. Pig has brought 3*l*. per ton in the Luxembourg. At the Ottange Works, in Alsace, grey refining pig has realised 3*l*. 10s. 10d. per ton on trucks. Not only are quotations for iron falling in the North and East of France, but the production has been everywhere diminished; there is, in fact, general depression. At the Providence Works a reduction of 10 per cent. has been made in wages. The exportation of iron from France has been declining of late; countries which were formerly in this respect tributaries of France appear now to have come to the conclusion that it is their interest to produce iron themselves, and foreign orders become more and more scarce accordingly in France.

The extraction of coal in Belgium is limited at present to the current requirements of consumption. Prices have experienced little change. According to advices received from the Lower Sambre, a strike which had broken out in some collieries in that district, and which had been supposed to have terminated, has partially re-commenced; the miners refuse to consent to the reductions in wages upon which the colliery proprietors insist. The men remain, however, very quiet, and it is expected that mutual explanations will shortly terminate the difficulty.

Notwithstanding strikes and notwithstanding an exhaustion of stocks—or at any rate a reduction of stocks—a fall in prices has become general in the French coal trade. The fall has been frankly accepted as inevitable in the Pas-de-Calais, but efforts to resist it have been made at St. Etienne. A good deal of attention continues to be devoted to the Channel Tunnel scheme. The Prefect of the Pas-de-Calais has published a decree authorising the company which is promoting the undertaking to enter upon properties along the coast in order to make the necessary preliminary surveys.

The Paris copper market has continued quiet, and the article has, to a great extent, been neglected. Chilian in bars, delivered at Havre, has made 89*l*.; ditto in ingots, delivered at Havre, 92*l*.; English tough cake, delivered at Havre, 92*l*.; and pure Corocoro minerals, delivered at Havre, 88*l*. per ton. At Marseilles copper has been a little better supported. In Germany the new year has opened quietly as regards copper, and transactions have been limited. There has been rather an animated speculative demand for Billiton tin in Holland, but at the last dates the market exhibited some weakness, and disposable might be obtained at 52¾ fls. There has been comparatively little business passing in Banca tin upon the Dutch markets; there are sellers at 58 fls. The next sale of the Dutch Society of Commerce will be held on the 27th inst., and will comprise 22,600 blocks of Banca. Tin has been in no great demand at Paris, but has, nevertheless, ruled firm in that capital. Banca, delivered at Havre or Paris, has made 106*l*.; Straits ditto, 102*l*.; and English, delivered at Havre or Rouen, 100*l*. per ton. The German tin markets have generally exhibited firmness. French lead, delivered at Paris, has brought 23*l*. 12s.; Spanish, delivered at Havre, 23*l*. 4d.; and Belgian and German, delivered at Paris, 23*l*. 12s. per ton. In Germany lead quotations have been pretty well maintained. Zinc has ruled high at Paris, and there has been no great amount of business passing in it. Vieille Montagne zinc in sheets has brought 32*l*. per ton at Marseilles.

According to correspondence published in the German journals our Black Sea coal trade is endangered. A letter from Odessa states that the attempt to supply from Austria the South Russian demand by means of the Gallican Railways must, so far, be regarded as successful. Last year 14,286 tons of Austrian coal were carried by the Odessa Railway Company alone, and should the companies interested see their way to a moderate reduction of the tariffs for the article in question, English coal would be completely driven from the Odessa market. A St. Petersburg letter states that it is expected that powers will be granted in the course of the next few months for the construction of the system of railways traversing the coal fields in the South of Russia, by means of which lines the coal will become generally obtainable. The deposits are described as almost inexhaustible, and the working have, we believe, already been very considerably expanded. In the year 1866 the yield of coal from these pits amounted to 125,398 tons, while in 1873 it amounted to 660,318 tons. The Russian journals are very enthusiastic on the subject, and prophesy that not only the whole of Russia, but the ports of the Mediterranean, will eventually be supplied with Russian coal exclusively. In any case, however, some years must elapse before the projected railways can be opened for traffic. On the other hand, the Westphalian coal proprietors are complaining of their inability to compete with England in the North German markets. One-half of the 20 per cent. added to the railway tariffs has just been deducted from the rates for coal to Berlin and the North Sea ports. It is stated in the report of the Dortmund Union, however, that this reduction can scarcely exercise any influence, as the rates are still too high. The coal produced in the Saarbruck district now finds a ready market not only in France, Alsace-Lorraine, Central Germany, and Switzerland, but even beyond the Alps, in Italy.

THE COMSTOCK LODE.—The progress made with the development of the Comstock lode is constant and satisfactory; many of the leading mining companies are now down to the depth of 2000 ft., and a few still deeper. When mining first began on the great lode such a depth was not thought of, or if thought of no one expected to see mining operations carried to such a depth as 2000 feet in less than 50 years. Now, we not only do not feel startled at hearing the great depth of 4000 feet spoken of, but when we see preparation in actual progress for sinking that far we think but little it. The Savage Company have broken ground for the foundations of new machinery, which is to be sufficiently powerful to sink their main incline to a depth of 4000 ft. This incline is already some distance below the 200 ft. level, and is still being vigorously pushed downwards. The new hoisting machine will be supplied with two 24-inch horizontal cylinders, of 4-ft. stroke, and will be of over 400-horse power. The foundations of this engine are being laid about 80 feet to the westward of the present hoisting works. A building, 50 × 60 feet in size, will be erected over the new hoisting engine and the machinery connected therewith. The carpenters are already at work framing the timbers for this building. The steel wire-rope to be used is to be 4000 ft. in length, and will weigh about 11½ tons. It is now being manufactured by Messrs. John A. Roebling's Sons, of Trenton, New Jersey, who have secured a patent for an improved method of construction. It will be a round rope 2 in. diameter at the upper end, but 2500 ft. of its length will be tapered, and the lower end will be 1¾ in. diameter. The wires of the patent rope are continuous, and tapering from one end of the rope to the other. The advantage in using these ropes for avoiding the dead load on the hoisting machinery for deep mining is very great. At a depth of 2000 feet it is double that of the ordinary wire-rope heretofore generally used; at 2600 feet the advantage is threefold. Practical economy will result from their use when a depth of 1400 feet has been reached. The superior character of the tapering ropes made by the Messrs. Roebling with continuous wires from end to end will be apparent to the mine operator and engineer when it is stated that the old method of making tapering ropes, and still in use in Europe, was and is by leaving out wires at intervals, so that a rope with 19 wires to the strand at the larger end would have only seven wires to the strand at the smaller end; and, aside from this defect, would have a multitude of ends of wires along its entire length constantly liable to work out and render the rope ragged, while at the same time they would subject it to an unnaturally rapid wear and tear, especially the latter. The Roebling system secures a rope having an equal number of wires throughout each strand, and a perfectly even surface that insures the largest possible wear. The reel on which the cable will wind and unwind will be conical, and the cable will wind about it spirally. The Ophir Company contemplate the erection of similar machinery, and propose pushing their works to a like depth. The Crown Point Company already have in operation machinery of much the same character as that being erected by the Savage folks, and having a cable of sufficient length to sink to the depth of 3500 feet. The Hale and Norcross Company, Consolidated Virginia Company, and other leading companies at this end of the lode, will erect similar powerful works, and will at once plunge down into the great unknown "depths profound," in which lie hidden the silver roots of the Comstock.

BOILERS.—Mr. F. H. LLOYD, of Wednesbury, has patented an invention, which consists in introducing one or more heaters into the flue or furnace of the boiler. These heaters consist of cylindrical vessels having a tubular passage in or parallel to the axis. By means of a pipe, or pipes, attached to the heater the latter is connected with the boiler. The bottom of the heater is provided with a pipe through which the feed water is supplied to the boiler. The heater from its position in the flue or furnace is exposed to great heat, and the feed water in passing through it deposits therein the greater part of the earthy matter dissolved in it. The deposit in the heater is easily removed by detaching the heater from the boiler and taking out one of its removable ends. The said heater, or heaters, may be fixed horizontally, inclined, or vertically in the flue or furnace. In vertical boilers the heaters may have a through passage for the fire both inside and outside. By these improvements the heat-absorbing surface of the boiler is increased, the rapid generation of steam is promoted, and any incrustation formed readily removed.

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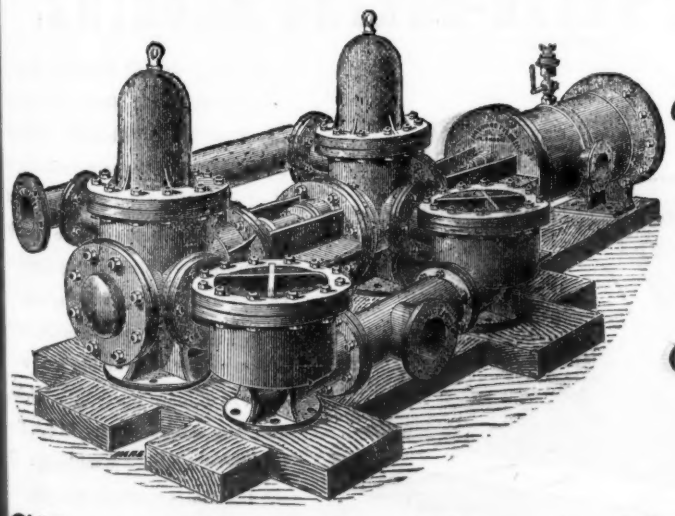

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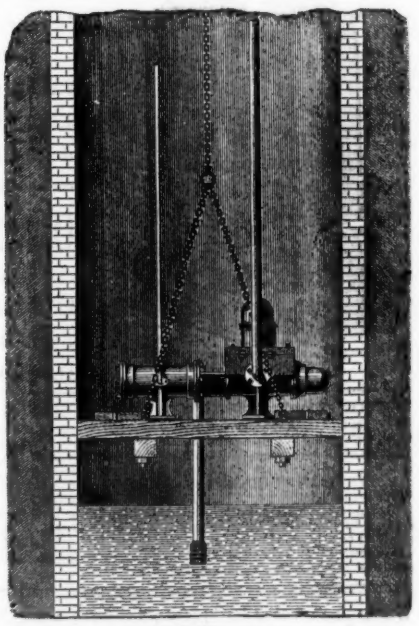

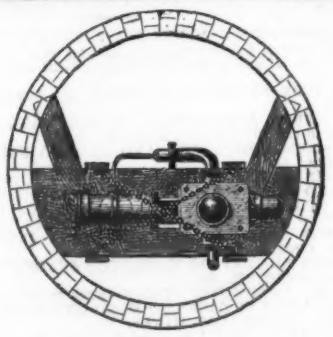

Silver Medal: Royal Cornwall Polytechnic Society, 1872.

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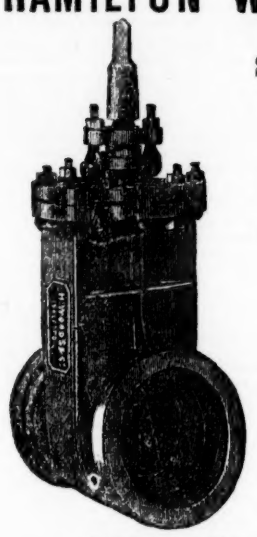

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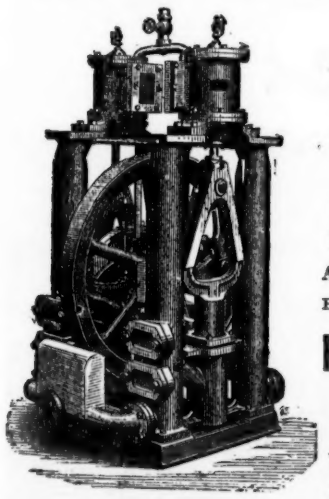

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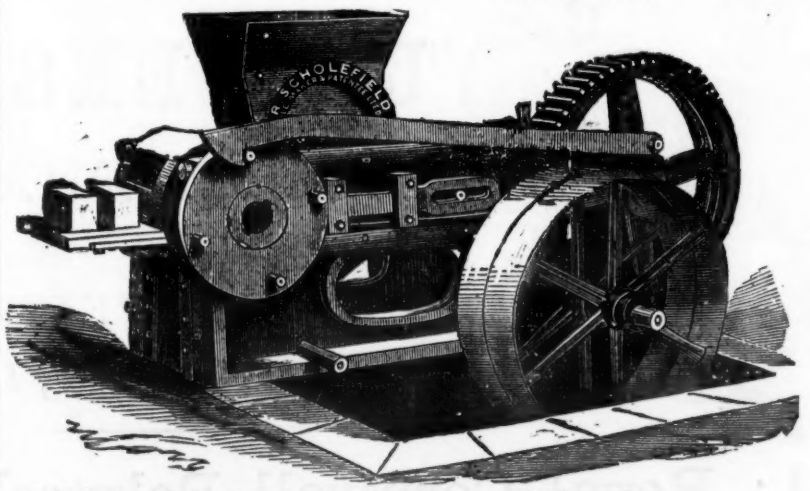

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1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0
Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.
As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

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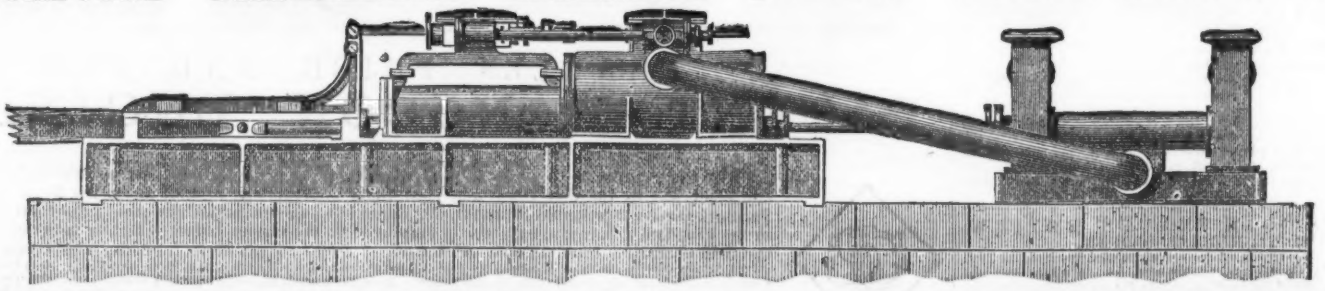

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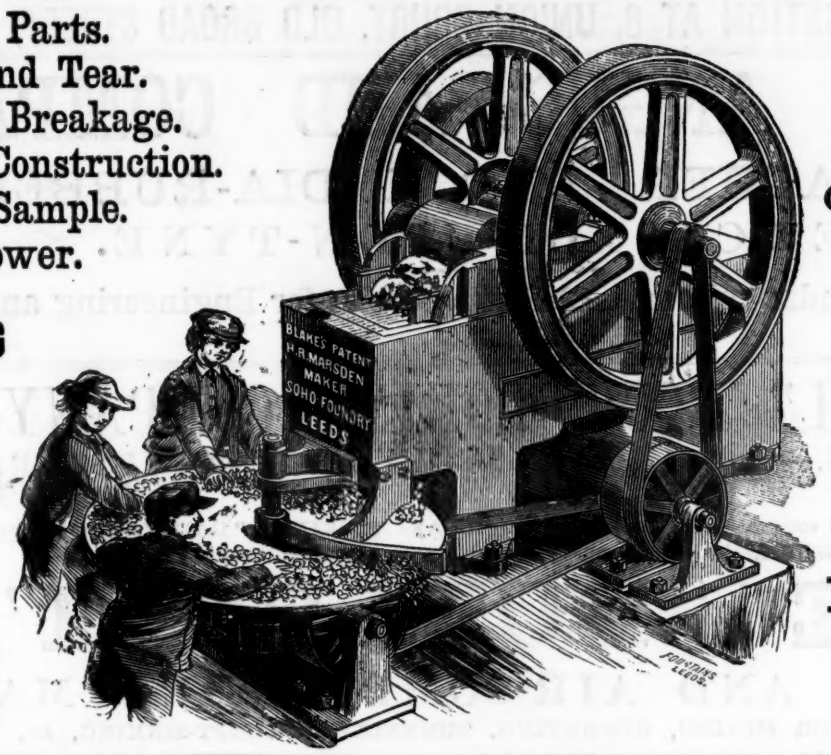

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